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ABSTRACT

This collection contains the keynote address and several presentations that were delivered at a University of Minnesota conference on issues in early childhood education. Keynote speaker Rheta DeVries discussed three tasks facing the educator who is learning to be a constructivist teacher: understanding the nature of the child's mind; overcoming four empiricist ideas about teaching and learning; and completing four phases in movement toward the practice of constructivist education. Sectional presentations concerned: (1) developing an understanding of artistic works through art education during early childhood; (2) planning for play; (3) rearing competent children by applying developmental concepts; (4) teaching young children concepts in fire prevention, evasion, and safety; (5) using books in the classroom; (6) using community-based screening in early childhood in public schools, preschools, and child care programs; (7) using a Piagetian approach to mathematics with manipulatives; and (8) coping with disability by means of identification of positive contributions made by disabled persons, an informal support network, mixed support from professionals, and limited expectations for the future. Citations accompanying the presentations number 80. Mailing addresses of presenters are provided. (RH)

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PROCEEDINGS OF THE EIGHTH ANNUAL CONFERENCE ON EARLY CHILDHOOD EDUCATION

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EARLY EDUCATION: BUILDING BRIDGES TO THE FUTURE

1988

September 30 and October 1

Duluth, Minnesota

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EARLY EDUCATION:
BUILDING BRIDGES TO THE FUTURE

September 30 and October 1, 1988
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Preface and Acknowledgements

The Department of Child and Family Development, University of Minnesota, Duluth, offers Early Childhood Studies Programs (formerly Early Child Care and Development) at both the undergraduate and graduate level. The programs have an interdisciplinary curricula designed to prepare students for work in a variety of settings.

Since1981, the Advisory Council of the Early Childhood Studies Programs have sponsored an annual conference in Early Childhood Education during Fall Quarter. Each conference highlights a particular topic of interest to professionals and parents of young children. The focus of the Eighth Annual Conference was *Early Education: Building Bridges to the Future*. The featured speaker was Dr. Rheta DeVries, Professor, Department of Human Development and Consumer Services and Director, Human Development Laboratory School, University of Houston. This monograph includes the keynote address presented by Dr. DeVries and several sectional presentations.

We wish to express our gratitude to our colleagues and members of the programs' Advisory Council for their advice and support; to Dr. Terrie Shannon, Associate Dean, College of Education and Human Service Professions for her words of welcome to the conference participants; to the Continuing Education and Extension staff for all of their efforts; and to Sue Siverson, our word processor, for her work in preparing the monograph for publication. We dedicate this monograph to Dr. Jeane Sword whose vision and commitment to early childhood education has inspired all of us.

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INTRODUCTION OF THE KEYNOTE SPEAKER: Dr. Rheta Devries

Eighth Annual Conference on Early Childhood Education

Dr. Rheta DeVries is Professor, Department of Human Development and Consumer Sciences, and Director, Human Development Laboratory School at the University of Houston. Following four years of public school teaching in Illinois, she entered graduate school at the University of Chicago where she received a Ph.D. in developmental psychology. She has lectured on constructivist education in the United States, and in Mexico, Australia, France, Germany, Argentina, and Korea as well. Her research has included studies of cognitive, social, and moral development in young children, and work with teachers in classrooms to conceptualize and articulate principles and examples of constructivist education informed by the work of Jean Piaget. She has authored several books including **Physical Knowledge in Preschool Education and Group Games in Early Education: Implications of Piaget's Theory** (with Dr. Constance Kamii), and **Programs of Early Education: The Constructivist View** (with the late Dr. Lawrence Kohlberg). Recent research focused on comparing sociomoral competence in children in Montessori and constructivist preschool programs. Currently, Dr. DeVries is studying sociomoral competence in kindergarten children in DISTAR, constructivist, and child-centered public school classrooms.

CONSTRUCTIVIST EDUCATION: Implications of Piaget's Theory

Rheta DeVries
University of Houston

Education based on Piaget's work is called constructivist education because Genevan research has demonstrated that children actively construct their knowledge and even intelligence itself. A constructivist teacher is one whose teaching is informed by the body of research and theory supporting this idea. Becoming a constructivist teacher is not easy because education based on Piaget's work is in many ways very different from traditional views of teaching and learning. I see three tasks for the educator in learning to be a constructivist teacher. First, one must understand the nature of the child's mind. Second, one must overcome empiricist ideas about teaching and learning that dominate our culture. Third, one must complete four phases in movement toward the practice of constructivist education.

Understanding the Nature of the Child's Mind

We know children construct their knowledge and intelligence because children have so many ideas we never teach them. Piaget's work revealed many surprising ways in which children think. The classic studies of conservation showed that young children base their judgment of quantity on the amount of space occupied. During the 1960's, Kohlberg and I devised modifications of some of Piaget's tasks in an effort to demonstrate persuasively that children really do experience the world differently from older children and adults.

For example, I modified Piaget's classic experiment with number by using unequal rows of M&M candies. In this task, two pizza plates were presented, one having five M&Ms in a short line, and the other having six in a longer line. Children were easily able to point to the row of six when I asked which had more to eat. Then the row of six was arranged in a row shorter than the five, and children were told they could take the row with more if they could correctly point to it. Almost all high-IQ six and seven-year-olds conserved--that is, they picked the shorter row of six as having more to eat. However, of the high-IQ five-year-olds, over 60% took the longer row of five, and of the average-IQ children, half the six and seven-year-olds failed to conserve. It amazed me to see so many children count the six M&Ms, then the five, yet still insist that the longer row of five had more to eat. One bright nonconserving kindergartner (who was almost six years old) did not count, but was encouraged at the end to do so. When she counted, she expressed conflict, commenting, "This one (six) **should** have more because it's six and this has five, but this (five) has more because it's spreaded out." She seemed highly aware of the "moreness" of the **number** six, and I thought she might then change her mind and conserve. So I gave her another chance and asked, "So which has more candy to eat?" and she said, "I pick the plate with five." For her, six was more than five only when she counted, but what really "counted" in determining quantity was the amount of space occupied.

Another situation in which I observed the intimate relation between thinking and emotion involved conservation, but is not a classical Genevan task. Kohlberg and I devised a situation with ring-segment cookies that present the child with a powerful illusion called the Jastrow effect. Although the two cookies are the same size, the one on bottom always appears larger. When the red one is below the blue, the red appears larger, and when the red is moved above the blue, the blue then appears larger. One 7-year-old clearly expected the conserved relationship and was quite astounded at the apparent transformation. He spontaneously began switching them back and forth, to verify the consistency of the apparent change. Then he made a series of hypotheses, followed by experiments to test them. First, he said that the board must be the cause, and looked under it. To check out this hypothesis, he took the cookies away from its influence, to find out whether the change still

occurred in mid-air. Seeing that it did, he was puzzled, but then thought of superimposing them. When I saw that, I expected him to understand. However, he again created the illusion, and still insisted that they indeed did change. For him, they were the same amount to eat when superimposed, but in the illusion position, they were not the same. Eventually, he made an arbitrary choice--but to be on the safe side, he took the one on the bottom.

In another study, I attempted further to explore Piaget's view that children's "incorrect" ideas about the world reflect a unique and different subjective experience, and that they interpret this subjective experience as objective, failing to make the distinction between the apparent and the real. I wondered whether the phenomenon of nonconservation of properties of inanimate objects had any parallel with the way in which children thought about the characteristics and identity of living creatures. So I trained a reluctant, but obliging black cat named Maynard to wear a ferocious-looking dog mask and a benign rabbit mask. Then I interviewed children from three to six years about whether the identity changed when the appearance changed. Let me quote in part from an interview with Christopher, a high-IQ boy of three years and eight months. He first was invited to pet the cat and did so fearlessly and with great affection. Then I screened the cat's head, and told Christopher to watch the animal's tail (so he would know I was not simply putting away one animal and taking out another). Presenting the cat with rabbit mask, I said:

> (Look, now it has a face like a rabbit. What is this animal now?) Rabbit (smiles, draws feet up onto seat of chair). (How can you tell?) (Laughs) Hi, rabbit. (How can you tell he's a rabbit?) He's a bunny rabbit! Hi! Hi! Hi! . . . (Is he a real rabbit?) Yes. (What happened?) Make him out a cat--a dog--now. (Could I make him a dog?) Yes . . . . Make him out a monkey this time! Make him out something else . . . . Make him out a cat again . . . . (Can he hop?) Hop. Hop, rabbit. He don't wants to hop. Hop, please. Hop. Hop for her. He'll hop for you later. (DeVries, 1969, pp. 14-16).

This type of response was given by all the three-year-olds, 80% of the four-year-olds, almost 40% of the five-year-olds, and even 25% of the six-year-olds.

Piaget's books and writings by other developmental psychologists are filled with revelations about children's reasoning. However, the content studied by Piaget and other developmental psychologists are for the most part not the content with which teachers are concerned. In education, we must learn how to explore children's reasoning in classroom activities.

In recent research (DeVries, 1986), I have tried to do the kind of research Piaget did with his tasks with some content meeting criteria for activities in constructivist education. For example, in research on children's conceptions of shadow phenomena, I found many surprising ideas. Almost all 9-year-olds believe a merged shadow is still there even though they can't see it. Even at this age, normal children attribute to shadows some properties of physical objects and reason that the merged shadow is under the larger shadow or mixed up with it. Many also believe that the way to make a shadow move from one side of themselves to the other is to turn themselves around 180 degrees. When they find this does not work, they often go to great lengths to change the shadow's position simply by their own action--never mind the light! They turn more slowly or more quickly, stand up, and lean forward. When they stand behind the light source and do not see their shadow, many children nevertheless insist that it is still there somewhere--in the darkness, on the dark wall, or inside themselves. One child said that it ran out the door and went to look. When he didn't find it, he decided it was in the wall. During a Summer Institute on Constructivist Education in Houston, one participant did some shadow activities with two-year-olds. They marked shadow outlines of outdoor play yard objects in the sand, planning to check later to see if they were in the same places. Unfortunately, it rained, and all the shadows disappeared. One of the children said the shadows could no longer be seen because the rain had pushed them into the ground! The next day, he carefully piled sand, dirt, and leaves "over" a shadow--as he said, "so no one will step on it and mess it up." What surprised me about these findings was that under-

standing shadow phenomena requires such a long time. Most 9-year-olds have not yet achieved the highest stage of reasoning and knowledge. I was also surprised that understanding shadows requires the construction of a whole network of spatial and causal relations as well as conceptions about the nature of light.

Even when we think we have taught children something, we often find they have understood in surprisingly incorrect ways. For example, one 8-year-old boy, Joe, tried very hard to explain to me what he had been taught about shadows. He described a demonstration with a paper circle that was white on one side and black on the other, pasted on the end of a stick. However, as Joe talked about this experience, it became obvious that he had understood nothing. He told me in careful detail that what you do is move the stick in front of a light so the shadow falls on the wall. When I asked him then what that meant, he struggled to say that it was the sun and the moon. When I asked him where the sun was, he said it was as if the light was the sun and the circle was the moon. I probed with a hint for him to mention the earth: "And the shadow is where?" His reply, "The wall." The earth was nowhere in his thinking. I tried to get him to reflect further by saying, "So how does that work?" He struggled, "The light makes--the dark." I repeated, "The light makes the dark. So how does light make it dark? He sighed at his own paradox and exclaimed, "That's the hardest question I ever tried to figure out." He concluded, "It's just a mystery. Prob'ly nobody knows."

This is an example of what Piaget called "school varnish." It is very easy for children to recite the words teachers tell them. And it is very easy for teachers to delude themselves into thinking they have therefore taught something. The sad thing is that Joe **knew** he did not know what he was talking about and felt inadequate. What was really tragic was that his energy was so focused on trying to give me the school varnish that he had no energy left for his own honest reasoning.

Consider an example of school varnish in arithmetic. One child quoted by Kamii (1984) wrote "5 - 2 = 5." This made sense because he put out five chips for the five, then two more for the two, then did what the sign said, and took away 2. Sure enough, five remained! Another example from Kamii's (1984) research on how children understood equations involved asking children to show what an addition statement meant by giving the number of objects to a doll. Take 3 + 2, for example. Many children who wrote the correct answer nevertheless gave **10** objects to the doll! These phenomena are the result of teaching children formalisms of mathematics before they have the logic it is intended to express. The teaching of arithmetic especially cannot be divorced from the development of logic--and, clearly, logic is not a **result** of understanding number statements, but prerequisite to it.

The studies I described are only a few of many in which researchers keep coming up with the same result. No matter what the content domain, young children think in ways that are qualitatively different from the ways in which older children and adults think. Certainly no one tells the child that quantity or identity changes with a change in appearance. These ideas must, therefore, come from the child--from his or her own effort to make sense out of the world--from the child's logic and psychological experience. This is what Piaget meant when he said that the child constructs knowledge.

When we take the trouble to find out how children honestly think, we find that they **learn** many things we do not teach. A central problem in education is the failure to adapt teaching to the way children know. From this perspective, many learning disabilities are in fact created by schools. Children at risk and children beginning school are especially vulnerable when teachers demand they learn what they cannot understand. Piaget (1969) argued that "If the child's thought is qualitatively different from our own, then the principal aim of education is to form its intellectual and reasoning power" (p. 160).

Constructivist education is an effort to take into account the nature of the child's mind and its natural laws of development. Over the past 17 years, I have struggled to figure out what this means in practical terms. It is not so easy because after all, Piaget's research is not research on learning, and his theory is not a theory of teaching. A big gap exists between the theory and its implications for classroom practice. I have therefore had to build a bridge and travel a two-way street between the theory and the

classroom in order to conceptualize, experiment, and describe education informed by Piaget's work. Many teachers have worked with me to move from a vague conception of active education to specific activities and principles of teaching. Looking back on this process, I can see that we had to give up many of our old ideas and construct new ideas about teaching and learning. Since many of you are new to what it means to be a constructivist teacher, I thought perhaps it would be helpful to talk about some of the difficulties and obstacles to constructivist teaching.

Overcoming Empiricist Ideas about Teaching and Learning

Most of the ideas to be given up in the course of becoming a constructivist teacher reflect the empiricist, behavioristic tradition in which we were all reared. Piaget's revolutionary research and theory contradict this tradition. The basic assumption of behaviorism is that the child is like a mirror, a vase, or a blank slate, or situated like a mirror to passively reflect the environment. In other words, in behavioristic or stimulus-response theory, the environment stimulates the child and elicits responses from an otherwise essentially passive creature.

In contrast, Piaget has shown that the child is not psychologically empty, but is born with action systems that function as instruments of knowing. The newborn already is acting on the world by sucking and grasping. Moreover, he is already elaborating his knowledge of objects through modifying his sucking and grasping actions to accommodate to them. Here are the origins of intelligence that becomes more and more differentiated as the infant expands this repertoire of actions. Notice the emphasis on **action in order to know**.

Now let us be more specific about some of the old ideas constructivist teachers give up, and the new ideas that replace them. I have conceptualized these into four shifts in teachers' thinking:

1. From instruction to construction
2. From reinforcement to interest
3. From obedience to autonomy
4. From coercion to cooperation

From Instruction to Construction. The teacher who focuses on instruction views teaching as transmission of information. In traditional teacher training, the emphasis is on subject matter and how to present it to children. The teacher's preoccupation is with instructing through sequencing content, drilling, correcting, and testing. In contrast, for teachers informed by Piaget's theory, the preoccupation is not the teacher's **instruction**, but the child's **construction**. Piaget emphasized that the aim of education should be not just to **furnish** the child's mind, but to **form** it.

In emphasizing the child's construction and de-emphasizing the teacher's instruction, Piaget made it clear, however, that teaching in accordance with constructivism should not be misunderstood to imply that the teacher has no role to play or that the children should be left with unlimited freedom to work gor play on their own. He notes that:

> It is important that the teachers present children with materials and situations and occasions that allow them to move forward. It is not a matter of just allowing children to do anything. It is a matter of presenting to the children situations which offer new problems, problems that follow on from one another. You need a mixture of direction and freedom. (Quoted in Evans, 1973, p. 53).

Now consider the preoccupation of instruction with subject-matter analysis. Too often, curriculum makers have sequenced content to be taught in terms of what are the simplest elements from the **adult** perspective. **Seldom** are these the simplest for children. For example, Emilia Ferreiro (Ferreiro and Teberosky, 1979) has shown that young children typically reject words of less than 3 or 4 letters as "something that can be read." They also typically reject the articles, "a," "an," and "the" as "something that can be written." The common practice of beginning reading instruction with short words thus starts with material dominated by what most children consider unreadable. For teachers informed by Piaget's theory, subject-matter analysis gives way to **child** analysis--that is, to thinking about how children think about subject matter. Teaching subject matter cannot be isolated from fostering reasoning. Fostering reasoning about a given subject matter means

that you have to be more creative than those who make the usual school curriculum. Activities suggested in traditional curricula are often inappropriate for young children. By bringing knowledge about the mind of the child to the subject matter, you can create better activities than those given in most published curricula.

Teaching informed by Piaget's theory must be based on knowledge of mental development within a subject-matter domain. Piaget himself expressed this by drawing an analogy between the practice of education and the practice of medicine. He said:

> The art of education is like the art of medicine: It is an art that cannot be practiced without special "gifts," but one that assumes exact and experimental knowledge relating to the human beings on which it is exercised. This is not anatomical and physical knowledge like a doctor's, but psychological. (Piaget, 1948, p. 94).

Traditional teacher training gives almost no preparation in psychological knowledge about the mind of the child and its development. Without this knowledge, teachers will not understand children's spontaneous procedures and may view them as a waste of time.

Consider the preoccupation with drill in the transmission of information. The common assumption is that if children do not know something, they should practice reciting right answers. However, from a constructivist perspective, when a child does not understand instruction, it is because he **cannot**. Therefore, the **worst** thing we can do is make that child do **more** of what he cannot do. This turns out to be either a rehearsal of failure or rehearsal of what the child finds meaningless. There is no better way to kill motivation. The large number of children in learning disabilities classes are eloquent testimony to the futility of drill and practice, and to the damage it can cause to self esteem.

The next preoccupation related to instruction is teachers' obsession with eradicating children's errors. Our traditional teacher training has told us that the responsible teacher tells a child when she is wrong, and corrects the child's mistakes. In contrast, the teacher informed by Piaget's theory has a healthy respect for errors as an important part of the constructive process. Sequences of instruction ordinarily ignore the important role of the wrong ideas children construct in their efforts to make sense of their experience. For example, Ferreiro and Teberosky reveal that it is **progress** toward reading when a child hypothesizes that each letter in a word corresponds to a spoken syllable. If this hypothesis is mercilessly corrected, the child learns to distrust his own reasoning, and to believe that right answers are only in the head of the teacher. Worse, the child is retained because the teacher does not recognize progress.

Preoccupation with testing leads people to believe that tests tell what children know. However, tests only scratch the surface of right answers. They tell us nothing about why wrong answers make sense to children. The constructivist teacher wants to know the child's reasoning behind wrong answers. **This** is information that will inform teaching. Preoccupation with testing is so entrenched that not only do teachers feel forced to teach for tests, but teaching itself often becomes just more testing. Consider the widespread use of worksheets. I say these are tests because a child cannot learn anything new by doing them. If he doesn't know the right answer, he can't understand why he is wrong. If he knows it already, he doesn't need the practice.

From Reinforcement to Interest. Behaviorist teachers believe children learn through reinforcement. This assumption is built upon the idea of the child as basically a passive responder to environmental stimuli. From this perspective, the role of the school is to arrange environmental stimulation to modify the individual's behavior through conditioning. It assumes that the teacher must be concerned about reward and punishment as the essential mechanisms for changing the child's behavior. The teacher with this model of the child in mind focusses on strengthening, weakening, extinguishing, or maintaining behavior through positive and negative reinforcement. Preoccupation with reinforcement leads to efforts aimed at artificially motivating children--for example, with gold stars or other rewards. In this model, the teacher attempts to regulate the child's behavior. Sometimes well-intentioned teachers are heard many times during a day to say "Good!" to children, thinking that this improves self-esteem. What such teachers fail to consider is that

such reinforcement can make children dependent on adult approval and short-circuit their own autonomous motivations.

In contrast to this view, the constructivist notion is that the role of the school is to provide the **conditions for development** that can only be accomplished by the child himself. In this model, the **child** is the regulator of action and learning. It is not the teacher's regulation that is important, but the child's regulation of knowing activity.

In some ways, it is much easier to teach with a focus on behavior. The teacher is the instructor who transmits information and tests children on whether they can give back this information. However, when children **fail** to give back correct information, it is **more** difficult to teach in this behavioristic fashion. It is more difficult because more of the methods that already failed continue to fail.

When traditional education fails, it is not the child's failure so much as the failure of **instruction**. Piaget's work gives us the basis for an alternative to the kind of education that has failed. The alternative I advocate requires that we revise how we think about what the child can know. This leads to fundamental revision of how we think about what we do.

From Obedience to Autonomy. The shift in teacher's thinking from obedience to autonomy involves the teacher's basic objectives for children. Interest and experimentation do not thrive in an environment in which the teacher is the authority demanding obedience. Mental activity flourishes best in a particular kind of relationship with adults. This relationship sets the tone, the moral atmosphere of a class that is crucial for intellectual development. Piaget (1932) contrasts two types of adult child relationships, one which promotes the constructive process and one which retards it.

The first type of adult-child relationship is one of coercion or constraint in which the adult prescribes what is necessary for the child to do by giving him ready-made rules and instructions for behavior. In this relation, the respect in the relationship is unilateral--the child's respect for the adult. The child's reason for behaving is thus external to his own reasoning and system of personal interests and values. Piaget calls this type of relation "heteronomous." Certainly, the young child's relations to adults are necessarily and largely heteronomous. That is, for reasons of health and safety, as well as reasons stemming from practical and psychological pressures on the adult, parents and teachers must regulate children externally in many ways. The child is forced to submit to a whole set of rules whose reasons are incomprehensible to him. The obligations to eat certain foods at certain times, to have a bath before bed, not to touch certain delicate or important objects, etc., can only be felt by the child as external since the necessity to carry out these obligations cannot be felt from within. Such adult constraint tends to consolidate instead of to correct the natural egocentric tendencies of the child. When governed continually by the values, beliefs, and ideas of others, the child practices a submission that can lead to mindless conformity in both moral and intellectual spheres. In other words, so long as adults keep the child occupied with learning what adults want him to do and with obeying their rules, he will not be motivated to question, analyze, or examine his own convictions and construct his own reasons for following rules. In Piaget's view, following the rules of others through a morality of obedience or of duty will never lead to the kind of reflection necessary for commitment to a set of internal or autonomous principles of moral judgment. Piaget warned that constraint socializes only the **surface** of behavior and actually reinforces the child's tendency to rely on purely external regulation.

Piaget contrasts the heteronomous adult-child relationship with a second type that is characterized by mutual respect and cooperation. The adult returns the child's respect by giving him the possibility to regulate his behavior voluntarily. This type of relation Piaget calls "autonomous" or "cooperative." He argues that it is only by refraining from exercising authority that the adult gives the child the possibility to elaborate, at least in part, his own rules, values, and guidelines for action. In so doing, the adult helps to open the way for the child to develop a mind capable of thinking independently and creatively, to construct a decentered personality, and to develop moral feelings of reciprocity in all kinds of social relations. By insisting that the child only follow rules, values, and guidelines given ready-made by others, the adult contributes to the development of

an individual with a conformist mind, personality, and morality--an individual capable only of following the will of others. Much education for children in poor communities is based on the idea that strict, even harsh, discipline is necessary "because that's what these children understand." Parents often support this approach. Tragically, obedience-based schools simply perpetuate qualities needed for submission.

Essentially, the difference between these two types of adult-child relationships is a difference in the exercise of power. Piaget (1948) commented as follows:

> In reality, education constitutes an indissoluble whole, and it is not possible to create independent personalities in the ethical area if the individual is also subjected to intellectual constraint to such an extent that he must restrict himself to learning by rote without discovering the truth for himself. If he is intellectually passive, he will not know how to be free intellectually. Conversely, if his ethics consist exclusively in submission to adult authority, and if the only social exchanges that make up the life of the class are those that bind each student individually to a master holding all power, he will not know how to be intellectually active. (p. 107).

The method by which the autonomous relationship operates is that of cooperation. Cooperating means coordinating one's own feelings and perspective with a consciousness of another's feelings and point of view. The motive for such decentering and reciprocity begins in a feeling of mutual affection and mutual trust which becomes elaborated into feelings of sympathy and consciousness of the intentions of others. Cooperation is a social relation between equal individuals. Obviously, children and adults are not equals. However, when the adult is able to respect the child as a person with a right to exercise his will, one can speak about a certain psychological equality in the relationship. Piaget, of course, was not advocating complete freedom. Rather, he suggested simply that coercion be minimized to the extent practical, and that what is most desirable is a mixture increasingly in favor of the child's regulation of his own behavior.

When we talk about decentering, autonomy, and cooperation, we are talking about the processes which are simultaneously cognitive **and** emotional. Adult constraint produces a constriction of children's minds, personalities, and feelings. Adult cooperation produces a liberation of children's possibilities for construction of their intelligence, their personalities, and their moral and social feelings.

Although Piaget felt that mutual respect is possible between the child and the adult, he pointed out that:

> It is extremely difficult to make the child forget that in the background there is always an authority which could reappear, even if one does one's utmost to make him forget. There is always a basic unilateral respect because there is an inequality in fact.

He went on to emphasize that it is only in relations among children themselves that there is the possibility for the real equality which can undo the constricting effects of unavoidable unilateral respect for adults. There exist, of course, inequalities and unilateral respect among children as well, but this is still different from the respect children feel toward adults.

I would like to add to these general comments on the effects of heteronomy the following remarks. Children who are normal or advanced in their intellectual development suffer less from the effects of heteronomy than at-risk children. This is because children who are retarded or delayed intellectually are less able to take the point of view of the adult and understand some of the reasons behind adult coercion. They also suffer less to the degree that they have confidence in themselves and simply discount the adult view. While perhaps placating adult wishes, children can sometimes retain their autonomy **despite** adults. In contrast, children who are not normal in their intellectual development suffer more because they are unable to understand coercion except as completely arbitrary. Coercive environments for these at-risk children increase inequities in education. These children are the most vulnerable, and thus the most likely to manifest the three unfortunate effects of heteronomy. These are rebellion, conformity at the price of loss of will, and calculation. By calculation, I mean following adult rules when the adult is watching, but doing what they like when the

adult is not watching.

From Coercion to Cooperation. This shift involves the teacher's most basic principle of teaching. It is actually the flip side of the previous shift from obedience to autonomy. The teacher whose objective is obedience must be coercive, even if she attempts to foster obedience through positive means such as cajoling or bribing. Certainly heteronomous practices can be discussed as a continuum from outright hostile and punitive methods to sugar-coated coercion. What these all have in common is emphasis on obedient behavior. The teacher is clearly the authority, and children's **behavior** is regulated by what the teacher wants.

In contrast, the constructivist teacher is a companion and guide who expresses respect for children and practices cooperation rather than coercion. Affective reciprocity in mutual affection is part of the foundation for reciprocity in reasoning--mobility in thought that involves coordination of relationships.

So what is constructivist education? Piaget says it is above all active. His general ideas are that active education:

1. Engages the child's interest;
2. Inspires active experimentation with all its necessary groping and error;
3. Fosters cooperation between adults and children and among children themselves.

Let us examine these ideas in the classroom context.

Interest. Active education does not occur in a classroom where children sit at desks in isolation from one another, doing paperwork. A constructivist classroom is one in which many different activities go on simultaneously. These activities include activities long associated with the child-development tradition in early education (for example, painting and other art activities, blocks and other construction activities, and pretend play). In addition, constructivist teachers add physical-knowledge activities (Kamii and DeVries, 1978) and group games (Kamii and DeVries, 1980). They view conflict as part of the curriculum and teach children how to vote and other negotiation strategies.

It surprises many people to learn that constructivist education for cognitive development is equally focused on affectivity. This "Piagetian" principle was elaborated well before Piaget by John Dewey. I recommend his short book published in 1913 on *Interest and Effort in Education* in which he argues that the aim of education is increase in ability to put forth effort. Dewey cautions, however, that some kinds of effort are **un**educative. These are efforts in tasks that involve nothing but sheer strain and the need of external motivation for keeping at them. Such tasks he describes as not only uneducative, but **mis**educative. They are miseducative because they deaden and stupefy, leading to a confused and dulled state of mind that always results when action is carried out without a sense of personal purpose. They are also miseducative because they lead to dependence on the external pressure of the taskmaster. When the child's interest and motivation lie in avoiding punishment or getting reward from the teacher, it is thus focused outside the task itself. Dewey says we should not look for motives **external** to activities, but for motives **in** activities. When teachers have to look for artificial ways to motivate children, something is seriously wrong.

Interest in activity is at the heart of constructivist education. Both Dewey and Piaget recommend that we start from the active powers of children. In what ways can young children be mentally active? The general answer to this question is that young children are motivated to be **mentally** active in the context of **physical** activity. Intelligence originates in infancy in action that is simultaneously mental and physical. The baby literally cannot think without physical action. Mental development is in large part a matter of gradually freeing mental activity from physical activity. For many years in childhood, however, physical activity continues to be closely associated with and necessary for mental activity. Many learning disabilities may be created by teaching methods that require children to think out of the context of interest and activity.

In order to understand what Piaget meant by forming the child's mind, it is important to know the special way in which Piaget (1969) saw the role of action in development. He distinguished two distinct types of action by which an individual obtains two kinds of knowledge. These two types of action arise

from two basically different types of psychological experience.

The first kind of experience is physical experience which consists of individual actions on objects and leads to knowledge of the objects themselves. For example, in picking up solids, the child can notice their weight by physical experience. In order to obtain this information, he must focus on this particular aspect of an object and ignore other properties such as color and shape. Piaget refers to this action as simple or empirical abstraction. Other examples include abstracting properties of objects by observing their reactions to being dropped or pushed. Knowledge which thus has its source mainly in objects is referred to as physical knowledge.

Logico-mathematical experience, in contrast, consists of actions on objects which introduce into the objects characteristics they do not have. For example, number is not a property of any group of objects but consists of relationships created by an individual. That is, the "twoness" of two objects does not exist in either object but is a group of relationships coordinated by the individual who confers on them this characteristic of quantity. Piaget refers to this action as reflective abstraction. Reflective abstraction is based not on individual actions but on coordinated actions. Knowledge which thus has its source mainly in the knower himself is logico-mathematical knowledge.

A third type of knowledge is arbitrary social knowledge which has as its source people. This is conventional knowledge that includes truths that are truths simply because people have agreed they are. For example, there is no logical or physical necessity that leads to the fact that school days are Monday through Friday, or that July 4 is Independence Day in the United States. The individual cannot find out these facts by deduction or by acting on the physical world. They must be communicated in some way by people. The communication must, of course, still be structured and given meaning by the individual.

Although Piaget has made these important distinctions, he then goes on to point out that the different types of experience, action, and knowledge are really inseparable. There can be no physical experience without a logico-mathematical framework, and the logico-mathematical framework itself is built in the course of physical experience. For babies and young children, there can be no logical-mathematical experience without objects to put into relationship. During the preoperational period (between approximately two and seven years), the physical-material-observable continues to dominate the child's thinking. The observable result of actions is the child's main interest.

These distinctions enable us to think about teaching in terms of the kind of knowledge involved in our objectives. In the case of physical knowledge, we need to encourage children to act on objects and think about their reactions. In the case of logico-mathematical knowledge, we must devise indirect ways of teaching that foster the child's construction of networks of relationships. In the case of arbitrary-social knowledge, we tell children directly, but still keep in mind that conventional knowledge, too, must be structured. For example, to learn that Austin is the capital of Texas, the child must construct a part-whole relationship. A five-year-old taught me this when I sat beside him on a flight from Houston, Texas to Los Angeles, California. He obviously had been told he was going to another city in another state and had been pondering the meaning of this. As he looked down on the earth shortly after take-off, he asked, "Is that still Houston?" I told him it probably was. He then asked, "Is Houston by Texas?" The spatial inclusion and double classification are not so easy for the child to construct.

The theoretical distinction of three kinds of knowledge also helps us know that when we teach children to recite numbers, we are teaching arbitrary social knowledge, not number in the logico-mathematical sense. We therefore know that it is wrong to talk about teaching children "number facts." This is wrong because knowledge of number requires the child to construct the whole system of numerical relationships. Consider again the example I gave earlier of the child who said six should be more than five but was not. She had some school varnish about six and five, but obviously did not understand the relation of inclusion--that since 5 is included in 6, 6 **must** be more than 5. This is not just a fact of arithmetic. It is logic.

Piaget's (Piaget and Szeminska, 1941) studies of class inclusion demonstrated the lack of logical

inclusion in the reasoning of young children. In research following Piaget, I showed children 4 brown M&Ms and a white mint. The class inclusion question was, "Is there more chocolate or more candy?" Even most seven-year-olds said "More chocolate." I asked them to put all the candy in my hand. No problem. They had the language. They knew the correct referents for the words. Yet, when I asked again, "So--more chocolate or more candy?" they said, "More chocolate." What I want to emphasize is that children's difficulties with number and arithmetic are problems of logic. Teaching arithmetic cannot be divorced from teaching to promote reasoning. The system of number is not just a pile of facts, but a network of logical relations of inclusion, seriation, and transitivity.

Experimentation. With Piaget's distinctions among different kinds of knowledge in mind, Constance Kamii and I worked with teachers to develop physical-knowledge activities with objects out of actions in the child's repertoire (Kamii and DeVries, 1978). Such actions on objects include pushing, pulling, rolling, sliding, tilting, throwing, dropping, blowing, sucking, swinging, balancing, and jumping. We developed four criteria for good physical-knowledge activities involving movement that teachers have found useful. First, the movement must be observable to the child. Second, the child must be able to produce it by his own action. Third, it must be variable so the child can notice correspondences between actions and reactions. Fourth, the reaction of the object must be immediate because correspondences are easier to establish when the child sees the reaction right away. The reactions of adults to children's experimental efforts are crucial. Sometimes such efforts are viewed as misbehavior by adults. It is easy to squelch a child's experimental attitude. The challenge for the teacher is how to foster it.

Cooperation. Social play is an important context for social and moral development because children have opportunities for decentering--recognizing and taking account of the behavior, desires, feelings, ideas, and psychological states of others. Inevitably, conflicts arise, and children must cope with opposition. Interpersonal conflicts of all sorts are an important part of a constructivist program of education because children are forced (sometimes painfully) to confront the opposed behaviors of others. With sensitive teacher guidance, children can begin to take account of the opposed desires lying behind opposed behaviors, and develop methods of cooperation--of coordinating their desires with those of others.

Four Phases in Moving Toward Constructivist Teaching

Teachers who attempt to become constructivist teachers go through a developmental process that is not easy. These are four overlapping phases I have observed.

1. Skepticism
2. Environmental change
3. Paralysis
4. Autonomy

Skepticism. The first skeptical reaction is often total rejection: "It won't work." Then there is the skepticism in the reaction, "I can't do it," and "These children can't do it." Another type of skepticism is concern that the teaching of content will be lost: "Reasoning and moral development are nice, but what about reading and writing?" As if the teacher's own skepticism were not enough, there is the skepticism of parents the teacher must deal with.

I cannot allay these skepticisms. It is you who must do that through your own efforts--and skepticism will not disappear overnight. I would say that for most teachers, it takes about two years. In fact, you can count on your skepticism to increase. By that I mean that as you try to implement a constructivist program, the nature of your skepticism will change. After all, constructivism is not just a process of children's development of knowledge and convictions. Teachers, too construct their conception of what constructivist teaching means and their convictions about it. Through your efforts, you will develop new questions and concerns that must be worked out in the course of teaching.

Environmental Change. This phase is characterized by such issues as "How do I arrange the room?" "What materials do I need?" "What activities do I write on the lesson plan?" A teacher new to

constructivist teaching typically goes through a period of panic reflecting anxiety over not having enough for children to do. The development of a repertoire of activities is important. As the repertoire becomes richer, the teacher also becomes more flexible in planning and changing plans to follow up on children's ideas and interests.

Resistances encountered in this phase include external and internal obstacles. Administrators are often not supportive. Fellow teachers are often critical, and their skepticism may increase your own self doubts. There may be no place to put the desks you want to remove. The floor may be too cold for children. The budget may not be large enough to provide all the materials you need. Making materials takes a lot of time. The classroom cannot be fully equipped all at once. When you haven't done this kind of teaching before, it's hard to know just what materials to give first priority.

This phase can be softened by apprenticeships with teachers who have been through it, by visiting classrooms where the program is already implemented, and by getting solidly into a social network in which you can talk about difficulties. I cannot emphasize too strongly the necessity for a system of mutual support with colleagues. Different people will be learning different things, and everyone can be a resource for someone.

Paralysis. Once the environment is basically made ready for children, the next phase consists of questions about the teacher's role. I have heard teachers say, "I used to know what to do and say to children, but suddenly I seem immobilized." In this phase, the teacher must confront issues of "What do I say?" "What do I do?" "**How** do I reduce my authority and not have chaos?" Skepticism may take the form of concern that children are wasting time. New problems will emerge in children's behavior. In a coercive environment, children suppress a lot. In a cooperative environment, emotional difficulties are more freely expressed. It is sometimes small consolation to realize that these difficulties will not be overcome unless they are expressed so you can work on them. Too, children who are accustomed to a coercive environment in school may react to the new freedom by testing it to see what its limits are. Teachers in the Human Development Laboratory School say they sometimes feel coercive when they have to follow through in enforcing classroom rules. They stress that they have had to make a special effort not to take children's misbehavior personally. Sometimes it feels like children are "out to get you." The feeling that children are trying to make you miserable is unhelpful because it then keeps you from taking a professional, problem-solving attitude focused on helping the child construct new schemes of social reaction.

As I have observed teachers with regard to thinking about children's thinking, three sources of difficulty have impressed me.

1. Some teachers spend such a large proportion of their time in classroom organization that they give themselves little opportunity to observe children's reasoning;

2. Some teachers provide few activities that inspire children's reasoning;

3. When teachers do engage in activities, they relate to children in an authoritarian way that orients children to trying to figure out what the teacher wants them to say. This cuts off or circumvents the flourishing of children's spontaneous reasoning.

In our Lab School, the main problem for new teachers is how to talk to children--and also how not to talk too much. Experienced teachers say that one of the hardest things they had to do was to eliminate "Don't," "Stop," and "Because I say so" from their vocabulary. They had to retrain themselves on how to talk so as to express respect for children. This means consulting with children, asking children for solutions to problems, and giving real choices that preserve the child's control of his behavior. I encourage you to meet in groups specifically to discuss how to talk to children, and especially how to listen. Teachers at the Lab have found it helpful to know "words to say" as they were working out their understanding of what it means to respect children, consult them, and give them choices. For example, they learned to ask new kinds of questions. They gave up asking for information, and began asking questions that appeal to action. An example is instead of asking "What color do you have to put in blue to make green?"; it was more fruitful to ask, "I wonder what would happen if you put in yellow?"

The child who already knows usually answers what he anticipates and does it. The child who does not know does not feel pressured to give an answer, but is free to try and find out. In shadow activities, teachers had to overcome a desire to get children to **tell** about shadows. Instead, they inspired experimentation by suggesting effects like "Could you make the shadow bigger/longer?" and asking "What would happen if you backed up?" or "What would happen if you raised your flashlight higher?"

All of this takes a lot longer than telling children what to do. At first you may be skeptical of the worth of taking this time. Teachers I know are not **really** convinced until they see changes in children. For example, two teachers recently told me they **heard** my advocacy of cooking activities, but did not really understand until they tried them how powerful they can be in engaging children's interest in reading, thinking, and cooperating. In cooking, too, they became convinced that it is sometimes useful not to correct children's errors. For example, two five-year-old cooks were careless with measuring the ingredients in their cookies. At snack time, they noticed that the cookies tasted "Yucky". The next time the recipe was used, they knew the reason for measuring carefully. Moral development was promoted as children felt a real responsibility to make a good snack for everyone to enjoy. These teachers began cooking because I suggested it, but they continued it because they became convinced by children's reactions.

Autonomy. It is this conviction that characterizes teacher autonomy. Like constructivism, autonomy is not just for children. The autonomous teacher knows not only **what** to do, but **why**. She has a solid network of convictions that are both practical and theoretical. The autonomous teacher can think about how children are thinking and at the same time think about how to intervene to promote the constructive process. Autonomy, too, is reflected in new ways of evaluating teaching effectiveness, new ways of assessing learning. The teacher becomes sensitive to subtle but profound changes.

Teachers in the Lab emphasized that they developed understanding in layers, each new one taking them beyond former understanding. In particular, their autonomy meant overcoming elementary education training and their own childhood educational experiences. They found that four years of college does not make one a teacher. Instead, growing never ends because children keep bringing new reactions to which teaching must be adapted.

The autonomous teacher gives up a lot of control. If child autonomy is to be fostered, the teacher has to give children the freedom to control themselves. This is scary because it is hard to know whether children can. The teacher new to constructivist teaching is skeptical with good reason. Developing confidence in children's ability is also something that takes time.

Autonomous teachers do not just accept uncritically what curriculum specialists give them. They **think** about whether they agree with what is suggested. They take responsibility for the education they are offering children.

Conclusion

In reflecting about the task confronting us of constructing constructivist education, I am reminded of an experience from my own childhood. At age five, my mother learned to knit, and so did I. For some time, I knitted a narrow fabric that got longer and longer. Finally, someone asked me, "Rheta, what are you knitting?" I answered, "I don't know--I'm not finished yet?" We cannot know ahead of time exactly what a constructivist program will be because this depends on what children contribute as well as what talented teachers contribute. I invite you to join me in the constructive process.

DEVELOPING AN UNDERSTANDING OF ARTISTIC WORKS THROUGH ART EDUCATION DURING EARLY CHILDHOOD

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The Associated Press, in June of 1988, sent out a release based on a survey of kindergarten teachers from a major city. The survey indicated that half of the children who enter the Chicago public school system are unable to say their first and last names or to speak in a complete simple sentence. The report also stated that "...most of the youngsters are also unable to identify basic shapes such as squares and circles, hold a pencil or crayon correctly, sit still and listen to a brief story or settle disputes without physical aggression." If this situation exists in Chicago then, in all probability, it exists elsewhere.

Surveys of this type show that programs are needed which will provide children with the basic learning tools so they are able to compete successfully in educational settings. Various programs have been developed for preschoolers that involve learning habits and building self confidence. A program based in art education can provide much of the needed background for children about to enter kindergarten level.

The current trend in art education is centered around learning to talk about, and produce art. This trend is referred to as Discipline-Based Art Education. Clark, Day, and Greer (1987) speak of reasons for DBAE to be recognized as part of the total school curriculum. "Discipline-based art education, as part of general education, aims to develop mature students who are comfortable and familiar with major aspects of the disciplines of art and who are able to express ideas with art media, who read about and criticize art, who are aware of art history, and who have a basic understanding of issues in aesthetics." (P. 138)

The purpose of this paper is to discuss ways in which young children can develop an understanding of artistic works. These techniques include looking at, discussing, and producing works of art. An excellent example of what can be done is a cooperative venture undertaken by an art gallery and parents and their young children. In the 1988 July issue of Art Education, Barbara Piscitelli describes the program that took place in the Queensland Art Gallery in Brisbane, Australia. A twelve week study conducted by the gallery, in collaboration with the School of Early Childhood Studies at Brisbane College of Advanced Education, involved thirty families, two museum educators and an early childhood educator. The project was called "Share the Joy!" (Piscitelli, 1988) and its purpose was to provide art appreciation experiences for preschool children and participating adults in a gallery setting.

An orientation session was held for the parents. They met with the staff and were made aware of project goals. As part of this session, they were made familiar with the gallery and its art works. Tutors were introduced and the parents were asked to provide them with information about their children.

At first, the tutors were used to point out various themes, techniques, and concepts to the children in an informal way. As the groups progressed, the tutors found themselves isolated from the parents and children. The younger children, ages three to four, seemed to prefer to discuss the art works with their parents while children four and five years old seemed to relate better in a group.

To get the children to respond to works of art, the tutors and parents used open-ended questions and casual conversation to probe the children's thoughts. Other methods such as role playing, movement, dressing up, and sensory explorationwere used. Props such as homemade binoculars and other cardboard viewers were provided to help the children to focus in on various aspects of the art work. By watching the children's body language and facial expressions, both parents and tutors began to sense when it was or was not appropriate to prompt responses from the children.

The responses of the children varied from the shy child who felt more comfortable talking quietly with a

parent to the child who enjoyed holding the floor by expressing verbal ideas to the entire group. Furnished with two rolls of cardboard taped together, the children went bird watching by peering into a painting depicting a variety of birds. Some children responded well to the idea of imitating the sculptural objects in the museum by lying down or standing in similar positions. The children often used the subject of the paintings and sculptures as vehicles for story telling.

Following the gallery experience the children and parents were taken to an area where both could get involved in the making of art.

Another program, involving a museum, took place in St. Paul, Minnesota in 1974. The St. Paul Museum, in cooperation with local college art departments, designed an environment emphasizing the five senses. Volunteers were employed to visit participating schools. The volunteers made contact with children and teachers of the third and fourth grade classes. These classes were designated to visit the museum and take part in the program. The volunteers explained the program to the children so that when they arrived at the museum they would have some idea of what to look for.

When the buses arrived at the museum, they were met by guides who organized the children into small groups of about twelve each. These groups were given an introduction to an exhibition. They were then told to look at the show individually or with a friend. Questions about the show were answered by the guides who were nearby to assist and encourage the children to become involved in the exhibition. In one situation, a fiber work was displayed in a horizontal position under a plastic box. The children were encouraged to identify with the piece by lying down on the floor in imitation of the fiber work.

After viewing the exhibit, the children were introduced to a tunnel that led into a room where the focus was on the five senses. Before entering the tunnel, the children and adults had to take off their shoes. The tunnel was dark and coated with hanging strings and ropes giving the person crawling through it an eerie feeling.

Inside the room the children were introduced to a large ear and hand lying on the floor, eyes hanging from the ceiling, and a huge nose into which they could enter The ear contained several small speakers; each was broadcasting an unusual sound. The children were told to place their ears against the big ear to determine how many sounds they could hear. The eyes contained beautiful colors and visual patterns. The hand had pockets at the knuckles and at the joints of the fingers. Each pocket contained a textural object. The objects ranged from smooth to coarse giving the children a variety of tactile experiences. The nose was a sturdy structure (some of the children climbed on top of it) containing shelves with various containers of smells. The children were exposed to many different odors which challenged the sense of smell.

Following the sensory room the children were led to a large auditorium where a movie screen came down to the floor of a stage. Slides were projected showing abstract images. The children were encouraged to come onto the stage and to use fabrics and costume material to make themselves blend into the projected image. This activity involving motion and play acting, accompanied by musical sounds, lasted for about a half hour.

The next stop was at an area where several stations were set up to give the children a chance to create images using a variety of materials. One station allowed the children to pound nails into a board; string was then added to create abstract patterns. Another station contained fibers and yarn; here they were encouraged to develop their own weaving looms. One station contained several easels. The children were given paints and brushes and were told to paint whatever they wanted. There were stations that had tables of three dimensional materials. The children were invited to construct shapes and objects of their choice.

After the period of constructive activity, the children were called together into a large area to discuss their art work. On a volunteer basis the children showed their work or commented on the work of others. The monitor skillfully directed the conversation so that basic concepts of creativity and an understanding of the art elements were emphasized.

In many ways these two programs, one involving a museum and the other an art gallery, are models of how to give children, from preschool on up, the

background to formulate thoughts about the visual arts by means of shared experiences. An analysis of the two programs shows that: (1) pre-planning took place which prepared the children, parents, and school personnel for their visits. (2) Volunteers were trained to provide the direction for interaction between child and adult. (3) Sensitivity was developed to detect when it was appropriate to elicit a response from the child. (4) Basic props were used to invite easy entrance into detailed viewing of various works, and to better understand the art elements. (5) Activities culminated in the use of art materials where the children could express their ideas in a visual way.

Positive and Negative Influence

The early life of young children is one of constant exposure to their immediate environment. In that environment they learn to walk, speak, and express themselves in countless ways. They are exposed to the sounds of music, family anger and joy, and numerous other sounds of daily living. Visually they are exposed to surrounding colors, shapes, textures, and linear patterns. As the children grow older, they are told stories and exposed to many feelings of adventure. It is within this framework that we can assist children to develop a visual arts awareness.

Art experiences based on problem solving or child-oriented discovery are best for developing a fundamental understanding of the functioning of the visual arts. Negative art stimulation should be avoided as much as possible. Negative art stimulation is any type of activity thrust upon the child that tends to interfere with his/her natural artistic development.

Coloring book type activities are a good example of negative art. These activities call for the child to accept adult-made images of subject matter at a time when the child's own images are forming. An incident now and then involving coloring books will not permanently damage a child's artistic development; however, constant bombardment at home, in school, or by the social environment will interfere seriously with image formation. Coloring contests in newspapers, magazines, and through various businesses, are constantly before the child. At school well-meaning teachers will often use coloring printouts to teach other subject areas.

The problem lies in the fact that it is one more coloring book exposure that interferes with the child's aesthetic and creative development. The question that arises is: Is it fair to sacrifice one subject area for the gain of another?

Art Games and Tools

Besides the use of countless art activities, art games and tools can be used to nurture the child's visual and aesthetic growth. The use of several prints of artists from a given art period can be made into a learning game. In one situation children, ages four to five, were asked to match small reproductions of paintings by French Impressionists with larger prints done by the same artist. The challenge for the children was to look at the smaller print paying attention to the theme, color, texture, brush stroke, etc. and to match successfully the print with the artist. Five large prints by Monet, Cezanne, Gauguin, Van Gogh and Degas and twenty small prints of different paintings by the same artists were used. The children did surprisingly well even when the theme was different. They knew Van Gogh's "Self Portrait" belonged with his "Starry Night". They knew well over 50% on the first try and rarely took more than two tries for a correct response (Brown).

Another game, designed to familiarize children with various artists and the style of their paintings, is as follows: Six pairs of postcard size prints varying from abstract to realism are used. Prior to initiating the game, a discussion is held with the four to five-year-old children to explain the difference between abstract, realism and expressionism. (The children seem to like the abstract prints because the colors are vivid.) When it is determined that the children understand the basic differences between the styles of art being used, the game begins. The prints are mixed and turned upside down. The challenge is to guess where the work of an artist (by name) or a style of painting is located. After a brief period of time the children seem to have little trouble identifying the location of all of the prints (Brown).

The "Texture Bag" is designed to allow children to develop an awareness of different textures. The "Texture Bag" can be a small box, a paper bag, a coffee can with a sock top or any other type of container large enought to hold several items with varying textures. Two-dimensional or three-dimen-

sional objects can be used. There are a number of ways to use this tool as well. One method is to glue different fabrics onto cardboard disks making two of each kind. One disk is placed in the bag while the other is displayed outside of the bag. The challenge is to find the mate to the disk that can be seen by feeling the various disks in the bag. This works best when a disk is held in one hand while the other searches for the mate. Getting the children to verbalize about the appearance of each disk aids them in their tactile search. Degrees of difficulty can be introduced by using obviously discrepant materials such as cotton and fur to begin with and then presenting materials such as terry cloth and silk together so that differences are more subtle.

Another version of the "Texture Bag" is to use three-dimensional materials such as shapes that are basically rectangular, circular, or triangular. The same procedure can be followed as with the cloth disks. Single items either two-or three-dimensional can be placed in the bag. Another challenge would be to tell a story about the items based on how they feel. The story can eventually be translated into a drawing or painting.

Talking About Art

Children who have a basic understanding of the art elements of line, form, texture and color are ready to discuss the works of adult artists. Discussions about art works should be conducted in such a way as to get the children to become involved in the art work. To do this it is best to start by having the children identify what they see when they look at the work. When the content of the work has been described the next step is to get the children to look at how shapes, lines, textures, and color are used by the artist. Reasonable questions to ask would be "How important are these to the art work?" "What would the work look like without any color?" Open-ended and leading questions such as these will get the children to relate to earlier discussions about the art elements. Other questions pertaining to likes and dislikes of the work should be asked to get the children to focus on the merits of the work according to their own personal choices. ("Would you like to own this art work?" "Would you hang it in your room?")

After a reasonable period of discussion, children should be told something about the history of the work. Using a story telling format, give some basic background about the artist. Where did he/she live? How did he/she become an artist? What type of art is it called? [Realism, Expressionism, Impressionism, Surrealism, etc.] What tools did the artist use to make the work?

When the art work has been discussed as far as the interest of the children extends, it is time to summarize what has been said about the work and to bring the discussion to a meaningful conclusion by having the children do an art activity that reflects the study of the art work.

An example of a good activity is one that was observed at a day care center. The children ages three to five were shown works by George Seurat. The subjects were discussed, using the above procedure and the technique of pointillism (placing primary colors side by side in dot form to create other colors) was explained. The activity involved having the children make a painting of any subject using the pointillism approach. A critique followed the activity allowing each child to discuss his/her painting (Rainbow Day Care).

Unlike those children mentioned in the Chicago survey, children who are exposed to the visual arts through activities which allow for the discovery of the fundamental art elements and who are given the opportunity to hear about the artists and their work, will be able to identify with the basic concepts of the visual arts. They most certainly should be able to give their first and last names, hold a pencil or crayon, and be able to sit to listen to a brief story by the time they enter kindergarten.

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PLANNING FOR PLAY

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Teachers of young children have long recognized the developmental values of play. Through play, young children develop physical skills by actively using the large and small muscles of the body; social and emotional skills by interacting with other children; and cognitive skills by manipulating a variety of materials in new ways. Teachers can help young children reap these benefits by carefully planning a variety of play experiences. The first step in this process is for teachers to recognize that there are different types of play and different social levels of play.

Types of Play

Rather than considering play as an undifferentiated activity, several researchers have identified specific types of children's play. The following scheme of functional play, constructive play, dramatic play and games with rules comes from Rubin, Watson, and Jambor (1978) which in turn was influenced by Piaget (1962) and Smilansky (1968).

Functional play, which is also called sensorimotor, exercise, or practice play, involves simple repetitive muscle movements with or without objects that are repeated with no purpose to construct. Examples of this type of play include running in the play-yard, pedaling a tricycle, swinging, or tumbling on a mat.

Constructive play involves the manipulation of objects to construct or create something. The end product of the construction is somewhat important, but the focus here is on the process of building. Examples of this type of play include blocks, small manipulative materials, such as legos, and most art materials.

Dramatic play involves role playing, or pretending to be someone else. Make believe transformations, such as using one thing for another or pretending to do some action, are other components of dramatic play. Superhero play, such as pretending to be He-man, has been the subject of several recent articles (Holcomb, 1987; Kostelnik, Whiren and Stein, 1986). Postive aspects of this type of dramatic play include the children gaining a feeling of power, while some of the negative aspects include the often violent and sex-stereotyped scripts of the play.

Games with rules involve conforming to accepted and pre-established rules. Examples of this type of play include tag, hide-and-seek, and kickball. Young children are not able to fully participate in this type of play until the cognitive abilities of decentration, reversibility, and perspective-taking develop, which generally occurs around six to seven years of age (Bogdanoff and Dolch, 1979). This type of play is quite popular during the elementary school years.

Social Levels of Play

Play typically takes place in a social context and several different patterns or levels of social play have been recognized. The following scheme of solitary, parallel, associative, and cooperative play was developed by Parten (1932).

Solitary play occurs when a child plays alone and independently with no reference to other children. This type of play is the first type of play a young child engages in, although it can be found among children of any age.

Parallel play occurs when a child plays independently but near or among other children. At this level of play, children may use the same types of materials but do not generally interact with one another. As children grow older they may use parallel play as a means to ease into, or out of, a more social level of play (Rubin, Fein, and Vandenberg, 1983).

Associative play occurs when a child interacts with others, even while using the same materials, but does not subordinate her or his own interests to the other children. In this type of play, children may play with the same materials and talk about them, but the play and the conversation has a disjointed and uncoordinated quality by adult standards. Associative play typically occurs only during the early years.

Cooperative play occurs when a child's actions are organized and coordinated with actions of an-

other child. For example, in cooperative dramatic play, the children would have family roles and work toward the same goal, such as making and eating dinner together. As with games with rules, cooperative play is dependent on a child's advancing cognitive structures.

There has been much discussion in the literature regarding which type or level of play is more mature or immature (Pellegrini and Perlmutter, 1987; Smith, 1978). Rather than address this issue here, a descriptive graph in Figure 1 shows at what ages the types and social levels of play are typically present.

Planning for Play

Teachers of young children can influence the types and social levels of play by varying the provisions of materials, time, space, and preparatory experiences in the classroom. Close observation of the children will then provide feedback to the teacher, as well as suggest when and how the teacher can become involved in the children's play. This model of planning for play is adapted from Collier (1985), Manning and Sharp (1977), and Johnson, Christie, and Yawkey (1987).

Provision

Certain materials have been recognized to promote certain types and social levels of play (Hendrickson, Strain, Tremblay, and Shores, 1981; Rubin, 1977). For example, housekeeping toys, dolls, dress-up clothes, and wheeled vehicles tend to promote dramatic play at the associative and cooperatiave levels. Blocks tend to encourage constructive and dramatic play at all levels of social play. Natural materials such as clay, play-do, sand and water promote functional play at the solitary and parallel levels, while art materials such as scissors and paints encourage constructive play that is solitary or parallel.

All types of play, especially dramatic play at the cooperative level, take time for children to recruit friends, work out differences, elaborate or extend the play episode and repeat the play. If children do not have enough time to play in this manner they may come to understand that play is not a valued activity. For this reason it is recommended (Griffing, 1983) that children have 30 to 50 minute blocks of time to play, if only a few times a week, rather than short 15 to 20 minute time blocks each day.

The amount of space in the classroom also influences play. Space is defined in square footage of floor space per child, minus space taken up by the tables, chairs, and shelves. Smith and Connolly (1980) investigated the effect of the amount of space on children's play and found that at 75 to 50 square feet per child there was much functional play at all levels of social play. At 25 square feet per child the amount of functional play decreased and there was more associative and cooperative play. When the amount of space was reduced to 15 square feet per child there was a marked increase in aggression and play seemed to break down altogether.

The arrangement or division of space in the classroom is a more complex matter, but in general, large open spaces tend to encourage functional play. Partitioned spaces, created by dividing the room with shelves or dividers encourages more associative and cooperative play. Enclosed areas, such as a blanket thrown over a card table, tend to encourage dramatic play amoung small groups of children.

Preparatory experiences, or things children have done, seen, or heard about appear to be especially important for encouraging dramatic play (Smilansky, 1968). Children need prior experience through fieldtrips, guest speakers, books, films, filmstrips, songs, and other stories before they can adequately recreate a setting or storyline in their play.

Observation

Teachers who have planned for play and who are familiar with the various types and social levels of play can use observation to gain valuable feedback. Observations that focus on the type of play that is going on, and the provisions that cause those types of play will help answer the question of how the provisions can be changed to encourage, enrich, or extend a specific type or social level of play. Several scales to systematically guide teacher's observations of play are available in Johnson, Christie, and Yawkey (1987).

Teacher Involvement

Teacher involvement in children's play can indicate approval, increase rapport and persistence, and encourage more elaborate play. When children's play is going well it may be desireable for the teacher to let the children play undisturbed. When children

are not interested in the play materials, or are abusing them, then more intrusive measures are appropriate. The followng methods of teacher involvement can be used in a variety of situations and are derived from Wood, McMahon and Cranstoun (1980).

Parallel playing occurs when a teacher is close to the child and uses the same type of play materials but makes no attempt to interact with or influence the child. This is similar to when children parallel play with one another, and is best used when the child is playing well and is very involved with the play materials.

Co-playing occurs when the teacher joins in an ongoing play episode and asks for information, instructions, or responds to the children's actions in a playful manner. In co-playing it is important the children still control the course of the play. Co-playing is appropriate when the play is generally going well but is repetitious or could use a little extra participation to keep it interesting and fun.

Play tutoring can take several forms and involves the teacher taking on a dominant or major role and partially controlling the course of the play (Smilansky, 1968). This can be done as inside intervention when the teacher assumes a major role within the play context, models behaviors that the children have not yet performed and directs the children in their play behaviors. An example would be a dramatic play area set up as a restaurant in which the children have taken no interest or are playing there but misusing the props. The teacher would assume the role of the cook or a customer, and in that role make suggestions and direct the play. Outside intervention occurs when the teacher remains outside the play context and directs the children by making comments and positive suggestions, giving directions, or directly demonstrating how to use the materials. To use the above example of restaurant dramatic play, a teacher using outside intervention would stand in or near the play area and in the role of a teacher, tell the children how they need to play with the materials and props. These types of play tutoring are intrusive and may not be appropriate to use when children are playing well with the materials and each other.

Being a spokesperson for reality occurs when the teacher remains outside the context of play and makes comments that encourage the child to make connections between their play and objects or events in the real world. For example, if children were laying blocks on the floor and the blocks happened to form the shape of a letter, the teacher would interrupt the play and point out that the children have made a letter with the blocks. This method is appropriate when there is an important opportunity for learning that the children will miss if the teacher does not intervene. This method should be used sparingly because it disrupts the play of the children.

Summary

Teachers can plan good play experiences by recognizing how the provisions of materials, time, space and preparatory experiences effect the different types and social levels of play. Observing the children at play can provide valuable feedback on the provisions for play and suggest ways teachers can become involved to extend and enrich play episodes.

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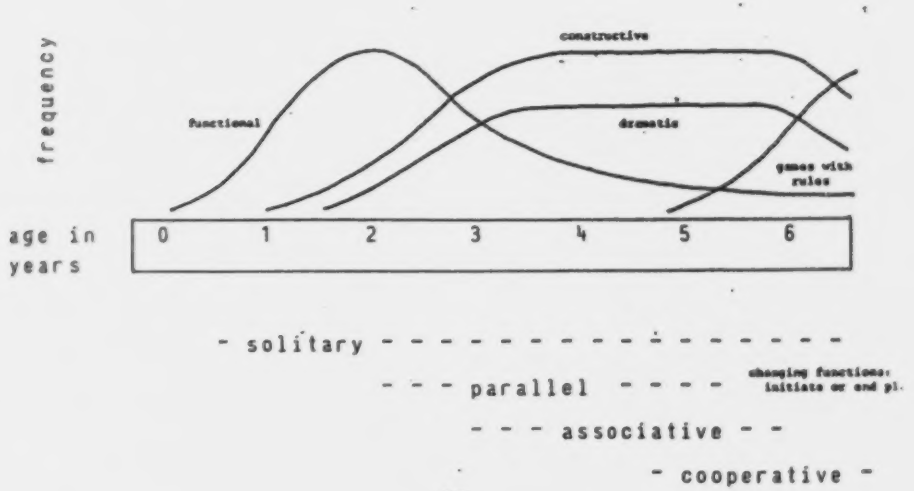
Figure 1

Frequency and Duration of
Types of Play and Social Levels of Play



REARING COMPETENT CHILDREN: DEVELOPMENTAL CONCEPTS FOR PARENTS, TEACHERS, AND DAY CARE PROVIDERS

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Because of the inadequacy of much of the childrearing advice received by parents and because too many children in our society fail to realize their full potential due to inadequate parenting, I am on a crusade to spread the word to teachers and parent educators about an extensive body of research findings from the field of developmental psychology that focuses on rearing competent children. This research has led to guidelines for childrearing that are based on empirical connections between developmental outcomes in children and the type of parenting they have experienced. Throughout my discussion, I will extend these childrearing principles to the educational context by highlighting related concepts and examples covered by Dr. DeVries in her presentations last night and this morning. Although the conceptual framework I use is based mostly on work with parentsand their children, I find that the same concepts--if not the identical terms--are applicable to educational settings.

For my conceptual framework I have chosen to concentrate on Baumrind's work (1967, 1971, 1973), because hers is one of the best-known studies and because a simplified version of her concepts has proven to be quite useful to me in understanding child-adult interactions and in introducing students to child development issues. [See Maccoby and Martin (1983) for an extensive discussion of research on parenting in addition to Baumrind's.]

Dimensions of Parenting

The four dimensions of parenting identified by Baumrind are control, maturity demands, communication, and nurturance.

Control. Control--which involves setting boundaries, guidelines, and expectations for children--is essential to the development of competence. Control contributes to independence and to internalization of parental standards. How you communicate rules and consequences for transgressions is vital. As we will see later in the discussion of parenting styles, this means that exerting control over children without appropriate use of the other three dimensions can lead to poor developmental outcomes. Eventually, control has to come from the individual if he/she is to become a competent adult. That is why internalization is important.

Maturity Demands. A major developmental outcome focused on by Baumrind is the development of independence in children. Independence does not mean isolation from others or lack of need for other people, but rather it describes children who can think for themselves and function competently on their own when necessary. Appropriate maturity demands contribute to the development of independence.

Maturity demands should be matched to the developmental level of the child. Neither unreasonable demands nor unchallenging demands will be very helpful to a child. Making appropriate maturity demands means that you expect the child to perform at her level--cognitively, emotionally, or physically. You expect the child to act up to that level and a little bit beyond. You would not say, "You must get all A's in school," if the child is currently doing C work. Instead, you might say (if you are sure it is due to low effort), "We're going to set aside an extra halfhour for studying after dinner to help you learn more, and maybe you'll be able to earn a C+ or even a B next term." You challenge the child in a positive manner.

Control and maturity demands work hand-in-hand in that the amount of control a parent exerts declines as the child gets older, that is, as the child becomes more competent and internalizes more of the behaviors appropriate for functioning in society. The same principle applies in the classroom. You should expect children to participate in structuring the materials for the day, in helping to plan activities, or in helping other children understand the rules of a game.

Implicit in the preceding examples is the fact that parents and teachers need to be aware of what their children and students are capable of doing. While an understanding of average abilities at given ages is very important for making initial "best guesses" about a child's developmental level, careful observation andassessment of the child's abilities is essential for appropriate individualized instruction or guidance.

Communication. The third dimension of parenting, communication, involves conveying expectations (i.e., controls and maturity demands) at a level the child can comprehend. Obviously, you would not give long explanations to 2-year-olds, and you would not give preschoolers complex or abstract explanations of why things need to be the way they are. For the older child, of course, extensive verbal and logical explanation is appropriate. Communicate your expectations, but do so in a developmentally appropriate way so that the child can understand.

The communication recommended by Baumrind is two-way communication. Instead of always telling the child what to do, ask the child about a situation that you need to discuss with him/her. Ask the child what he/she thinks or how he/she interprets the situation or what his/her feelings are about it. The idea is to listen to the child's opinions. This does not imply, however, a purely democratic family or classroom. Baumrind has purposely not labeled any of her parenting patterns "democratic," because she recognizes that there is a natural power differential between the mature adult and the child, who simply does not know as much about how the world operates. Nevertheless, it is important to solicit and take the child's opinion into account. This approach gives the child a sense of responsibility and a context for accepting situations when their parents have to say "no." If you get children to a point where they are accustomed to the constructivist style of teaching and they are functioning well within it, then many decisions can be made democratically. But, there still will be situations in which the teacher makes the ultimate decision.

Nurturance. There are two aspects to nurturance: warmth and involvement. Warmth, which is what we most often think of when we hear the term nurturance, includes loving the child, having compassion and empathy for the child, and expressing these feelings both in words and displayed attitudes. Nurturance also includes interest or involvement in the child's life. This means showing pride in his/her accomplishments, praising his/her accomplishments, and showing pleasure and interest in what he/she is doing. Children need nurturance in addition to control, maturity demands, and communication. A child needs to feel that he/she "is somebody" who is valued positively by others, because these feelings become an important part of the self concept, influencing the value (self-esteem) the child attaches to himself/herself.

Using the Four Dimensions. The preceding four dimensions run through my mind when I am observing interactions between adults and children. I actively think about the type of control, maturity demands, communication, and nurturance exhibited. If I am consulting with a parent or teacher about a child, these concepts also come in handy for interpreting what the parent/teacher is telling me and for organizing my questions and suggestions. Now let us see how these four dimensions can be combined into distinct styles of parenting.

Parent Patterns

The next step is to describe how the scores on each of the four dimensions define general patterns of parenting. Most parents' styles correspond approximately to one of three parent patterns: the authoritative, the authoritarian, and the permissive patterns. A pattern is defined by a unique combination of high or low scores on the four dimensions.

The authoritative pattern has high scores on all four dimensions (i.e., control, maturity demands, communication, nurturance). I highly recommend this approach to interacting with children, based on my values regarding what competent children are or should be.

The authoritarian pattern is fairly high on control, but the authoritarian's maturity demands and communication often are not appropriate. There is very little clear communication, and nurturant behaviors and attitudes are not common.

The permissive pattern is low in control, fairly low in appropriate maturity demands and communication, but is high in nurturance.

Misunderstanding Development

It is apparent that permissive and authoritarian parents do not understand child development very well. They share this characteristic with the non-constructivist educators we saw in Dr. DeVries' videotapes. These individuals miss important clues in the behavior of children. I will next point out how each of them, in unique ways, do not understand important aspects of child development.

Authoritarian adults do not understand the inability of the young child to reason like an adult when faced with instructions or commands. What this means is that authoritarians assume that because they have stated something in simple and clear language, the child will understand and follow a command. The authoritarian may not realize several possible areas which children might not understand well: (a) Logical sequences of ideas. (b) The time dimension, as in past- or future- oriented statements.(c) The understanding, not recitation, of the concept of number. (d) Serial order relationships among objects. (e) Conditional statements.

An extreme example: "I want you to take the three smallest and four largest plants from the window in two hours if the sun is still shining brightly so that they don't burn." The likelihood of this instruction being carried out by a 4-year-old is low. What happens when the child inevitably "disobeys instructions?" The authoritarian is likely to think, "This is an irresponsible child who needs to be disciplined now. I've got to impress on him the importance of listening to instructions. Next time he'd better listen to me." The general context from which these feelings arise indicates that the authoritarian also fails to appreciate the child's need for nurturance.

Permissive adults do not appreciate young children's need to have controls. Children need structure or guidelines. They are still learning about life and about the way the world operates. The permissive parents are not giving the child a very good chance to learn because they are following what amounts to a "sink or swim" style of childrearing which can be overwhelming to the child and which fails to help the child develop internal controls. It is no surprise, then, that the result is a less mature, more dependent, and less self-reliant child.

Comparing Three Patterns of Teaching

Now let us translate the three parenting styles to teacher-child relationships by discussing some classroom examples.

First, consider the authoritarian style of teacher-child interaction by recalling the "drill sergeant" math teacher in Dr. DeVries' videotape. Her lock-step drilling showed high control, as did the well-trained children shouting back their answers in unison. She also had clear control in instantly being able to get compliance by saying, "stop, don't sit," etc. Her style, however, might involve inappropriate maturity demands, because the lock-step drilling task itself might be creating the behavior problems by boring the children.

You certainly saw boredom in the videotape of the man teaching a board game to a child. I, too, got impatient just watching him teach, which helped me empathize with the bored and restless child. Even though we did not see scolding or other harsh behaviors, this teacher showed authoritarian characteristics of high control, inappropriate maturity demands, ineffective communication, and lack of nurturance. If he had attempted to monitor his effectiveness by observing the child, he might have noticed the child twisting around, not paying attention, seeming to get tired, etc. In fact, the child's behaviors were probably brought about by the teacher's need to control through lecturing, his inattentiveness to the student, and his failure to make developmentally appropriate maturity demands as demonstrated by his choosing to communicate through a monologue with the young child.

Dr. DeVries' videotape of the woman teaching children how to play the Halloween board game is an excellent example of an authoritative teaching style. You saw her nurturance (warmth) and her maturity demands in that she knew where her students were developmentally. You saw clear communication--not the type of communication where you tell the child what to do at each step but rather the type of communication in which the teacher asks and suggests. And yet there was appropriate control, and learning was taking place--those children were engaged in the task and were cooperating nicely. If you would enjoy playing/teaching with children like that and are envious of the teacher's "good luck" in

having such students, keep in mind that the teacher's authoritative style probably had a lot to do with how the children behaved.

I do not recall an example in Dr. DeVries' videotapes of a permissive teacher, but a permissive teacher probably would engender chaos in the Halloween game teaching situation. The permissive teacher would not have communicated clear expectations to the children, and at the same time he would not have provided structured guidance that would have allowed the children to accomplish something. He may have had a lot of aimless wandering or inappropriate use of the board game. The permissive teacher would have been nurturant, however, thinking things like, "Isn't this wonderful how the children are playing. Isn't it wonderful how we're allowing the children to blossom and bloom and do their own thing."

Developmental Outcomes

Up to now, I have described the four dimensions of parenting and how they combine into three basic patterns of parenting/teaching. What I have not yet addressed, however, are these important questions about developmental outcomes in children: Do the different styles of parenting and teaching matter? Why do I recommend the authoritative style? Why am I hard on the authoritarian and permissive styles? To answer these questions, let us look at what Baumrind found in her research about the characteristics of children who have been raised under the three parenting styles.

Children of authoritative parents are the most mature and competent. They are content, independent, realistic, self-reliant, self-controlled, explorative (i.e., they are more likely to try to discover about their world on their own), affiliative (i.e., they state their needs and ask questions of peers or adults). This, then, is the general picture of what Baumrind means by competent children: independent, able to function well socially, able to learn on their own, and content about their life.

It is not just what the authoritative adult does to or with the child that leads to these positive outcomes; the child also observes an excellent model of someone who is competent, self-assured, fair, and nurturant. You are all well aware that young children learn much of their behavior through observational learning and, therefore, children of authoritative parents tend to imitate authoritative behavior.

Children of authoritarian parents are moderately self-reliant, and it should not surprise you that they are also moderately self-controlled, since they get a lot of "don't do that, do this" commands. They are, however, relatively discontented, insecure and apprehensive, withdrawn, distrustful, and less interested in affiliating with their peers. At least when the threat of externally imposed consequences is present they behave well, but the development of internal controls is not as thorough as in children of authoritative parents.

The outcome for children of permissive parents is a surprise for people who believe that children need to "blossom" on their own (without interference from the "corrupting" adult way of seeing things), because these are the most immature children. They are highly dependent, less self-controlled, less self-reliant, and more withdrawn.

Effective Schools Are Authoritative Schools

I would like to expand on my earlier discussions of how the parenting dimensions can be applied to the educational setting. Let us use as an example the discredited, non-structured, completely "open" classroom concept. In the extreme version of the open classroom, there is little recognition that some children may need quiet space, or that some children may need suggestions as to what learning centers to address themselves to. There is no structure because the teacher believes that, "I've got to let children blossom; I've got to let them discover on their own because Piaget says so." This, of course, is a misunderstanding of Piaget. The concept of control in Baumrind's model tells us that children need structure and guidelines. Not, however, the "do this, don't do that" type of structure, but, subtle, structured control that can help guide them as they actively learn on their own. The constructivist educators Dr. DeVries described provide this kind of authoritative teaching.

In my experience very effective teachers--and here I include not just cognitive effectiveness, but also effectiveness in classroom management and attending to the needs of the whole child--tend to be authoritative, no matter what particular pedagogical theory they have been taught. The authoritative

pattern may have been part of their individual styles before they began studying for their teaching degrees, or it may have developed through experience as they were shaped into the types of interactions that prove to be most conducive to helping students develop cognitive, social, and emotional competence. This is not to suggest that college preparation is unnecessary for teachers--obviously there is a lot more to know about children and teaching than is inherent in Baumrind's model!--but within the general parameters that we see in good teacher preparation programs, personal "parenting" style (and experience) contribute much to the differences between effective and ineffective teachers.

To take a broader perspective that encompasses not only the one-on-one teacher-child interaction, I refer you to Rutter's (1983) article. Rutter reviews research on (a) what we mean by effective schooling, and (b) the outcomes of schools that are effective. His review included school size, class size, available money, the climate of the school, the instructional expectations, and the teachers' preparation. Rutter defines the better outcomes of effective schools not only in terms of higher scores on standardized tests and attendance, but also in terms of less destructive school behavior, less delinquency, more students going on to college, higher student self-esteem.

To summarize Rutter's 25-page article in one sentence: Although he did not use the term "authoritative," his conclusions indicate that unusually effective schools are authoritative, that is, their characteristics as institutions are similar to those of authoritative parents. [NOTE: The use of the term "authoritative" to describe Rutter's conclusions was suggested by Helen Bee (1985).] Furthermore, Rutter found that the effective schools are authoritative schools from top to bottom. The administration's interactions with teachers are authoritative rather than authoritarian. The teachers interactions with their children are authoritative rather than authoritarian or permissive. There is a climate in the schools of clearly communicated high expectations in a nurturant environment.

A Concluding Recommendation

Baumrind's research, DeVries' ideas on constructivist education, and Rutter's conclusions about effective schools all converge on the idea of authoritative style. Therefore, if I had to choose just one, brief recommendation for teachers educators, parent educators, and future teachers, it would be to encourage them to internalize the basic dimensions of the authoritative style. They should become familiar with the meaning and implications of control, maturity demands, communication, and nurturance so that they can use these concepts in making decisions about how to work with children in the wide variety of situations they encounter. Much of the training and advice that teachers and parents receive consists of myriad childrearing prescriptions for specific situations. The power of the approach I have outlined is its emphasis on general rather than specific characteristics of child-adult interactions. When internalized by the parent or teacher, the Baumrind concepts can be used (a) to generate plausible solutions to childrearing situations, (b) to see connections with other terms and ideas learned through training, and (c) to systematically analyze for later application examples from his/her own experience.

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STEVE AND PATTY DO THE GREAT CHICAGO FIRE

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On October 8, 1871, Mrs. Patrick O"Leary's cow kicked over a lighted lantern starting her barn on fire. Strong gusts of wind blew the flames from the Southwest Side barn and raced the blaze in all directions. This mishap is believed to be the ignition of the Great Chicago Fire. The people were in a panic! Flames swept throughout the city, chasing some residents out of town, while others dove into the cool waters of Lake Michigan to save their lives. The fire burned for over 24 hours, killing at least 300 people, leaving 90,000 homeless, and destroying the entire downtown and surrounding areas.

Recognizing the need to educate the public about fires, the United States established Fire Prevention Week in 1922. The week including October 9th was selected, the anniversary of the Great Chicago Fire.

It used to be that passing out plastic fire hats and distributing coloring books was all there was to observing Fire Prevention Week with young children. But this is not enough. The July, 1987 edition of "Fire In The United States" reveals the United States as ranking third highest in deaths among industrialized nations of the world. Children, from 1-4 years, are targeted as the second most vulnerable victims. (Elderly people over 75 years came first.) Identifying young children as a risky population, fire departments have prompted a new strategy; "Education and Prevention".

Their new approach emphasizes positive fire prevention steps for children. Fear is minimized and replaced with accurate information. Their theory affirms that children do have the ability to think fast and clear in emergency situations, but they must rely on previous experiences to be effective. Without prior knowledge, their first reactions can be fatal to them. In fires, many children run to their most familiar exit, rather than crawl to the closest means of escape. Some hide in closets, unaware that the approaching stranger is a firefighter dressed in unfamiliar gear.

Firefighter Steve Hartsock, from Duluth, Minnesota, understands children's behavior in fires and took measures to change their attitude. With support from his union, he co-created Operation EDITH, a 16 foot by 16 foot, seven room "house" that teaches children to react quickly and sensibly to a fire alert. "We, (the firefighters), want children to make their own fire escape decisions, so we built Operation EDITH (Exit Drills In The Home)", he explains. A smoke machine and a revolving beacon light make a simulated fire in the portable house. The children's task is to crawl through the house, avoid the fire and decide on the safest means of escape. Operation EDITH travels through the community with firefighters volunteering their time to help teach the children.

Like Duluth, fire departments across the United States are initiating innovative fire prevention programs. Puppet shows, comedy acts, mechanical robots and computer programs introduce children to good fire safety habits which help provide them with confidence to protect themselves in emergency situations. But because of limited resources, fire departments want to involve the whole community in fire prevention. In many areas, public and private organizations have acted and formed partnerships against fire. Unfortunately, far too many people look at the nation's fire problem with indifference. They allow their "it won't happen to me" attitude to neglect responsibilities. In 1973, Congress appointed the National Commission on Fire Prevention and Control to identify problems and suggest solutions to this difficult issue. Their recommendations compiled the lengthy report, "America Burning". Last fall, fourteen years later, a conference was held to measure the reports progress. The disappointing results re-

vealed America is still burning. Although some strides have been made in the past fourteen years, not enough has changed to make a difference. Lack of concern still dominates public opinion, with the young children and the elderly paying the highest price.

This dilemma does not have to continue. If education is the key to the solution, we, as early childhood educators can make an impact on this serious problem. Young children are capable of understanding fire safety skills if these are presented appropriately. Also, as we teach the children, we influence the parents as well. Fire safety becomes a family project, with each member participating to make it work.

Emphasizing the responsibility does not rest entirely upon the teacher, fire departments suggest working cooperatively for best results. Duluth Fire Marshall, Dave Mattson, stresses this message. "We welcome calls from teachers," he says. "If we each contribute our strengths, we can provide a program that benefits all."

The problem occurs when we feel inadequately trained to teach fire safety. Besides assistance from the local fire department, there are printed resource materials as well. With cooperation from Sesame Street, the Federal Emergency Management Agency sponsors the "Fire Safety Book". Geared for preschool children, the book includes songs and plays to deliver the fire safety message. A free copy can be obtained by writing:

FEMA

P.O. Box 70274

Washington, D.C. 20024

Attn: SSFS

I have found the "Learn Not To Burn" curriculum, developed by the National Fire Protection Association, to be my most valued resource. Many fire departments own copies of the curriculum and eagerly share them with interested teachers. Unfortunately, "Learn Not To Burn" targets kindergarten children as their youngest age group. Even though the detailed lesson plans are helpful, work is needed to make the information developmentally appropriate for preschool children.

Firefighter Steve Hartsock and I have collaborated to bring the fire safety message to more than 300 preschoolers in a six-year period. Adapting the "Learn Not To Burn" curriculum to meet the needs of young children, the following concepts have been successfully taught:

1. THE FIRE DRILL: Chances are, each person will be involved in a fire once in their lifetime. In a crisis, people draw on past experiences to get them through. The fire drill, observed at various times and places, is effective in preparing children to escape. Usually the school has a set procedure, but also involve the children in creating the plan. This experience gives them the confidence to take care of themselves.

2. STOP, DROP AND ROLL: If your clothes catch fire, stop immediately and drop to the ground. Extend your arms above your head and roll over and over until the flames are smothered. Practice Stop, Drop and Roll with the children. Give the signal, "Clothes on fire!", and encourage the children to respond quickly. When space is limited, suggest they roll a short distance in one direction, then reverse. Roll back and forth until the fire is out.

3. CRAWL LOW: Smoke rises, the cleanest air is near the ground. In fires, most people die from inhaling the smoke. If you are in a fire or a smoky place, remember your escape plan and crawl to safety. This idea helps children understand the behavior of smoke: A large piece of black material can simulate smoke. Demonstrate how smoke rises by lifting the opened fabric above head. Lower the fabric for the children to visualize how smoke moves closer to the ground as it builds up in a room. Encourage the children to crawl under the fabric to escape the smoke.

4. FEEL FOR HOT DOORS: When in a fire, first touch the door you plan to exit. If the door is hot, there is a fire on the other side and you must think of another means of escape. If the door is cool, open it slightly and look for smoke, heat or flames before exiting. Role play a house fire with the children. Include crawling to the door as part of the activity. (Be sure to distinguish this role play from a school fire when they should walk to the door.) Ask, "Is the door hot? What should we do next?"

5. THE MEETING PLACE: Many people die searching for family members in a burning house.

Each family should decide on a prearranged place away from the home where they can meet once they have escaped the fire. This lets everyone know who is safe and who may still be inside. If someone is missing, let the firefighters know when they arrive. Never go back inside yourself, firefighters are trained and dressed for that type of rescue. Send a note home to the parents informing them of the meeting place idea, and asking them to make selecting a meeting place a family activity. Also in the note, stress the importance of smoke alarms. Remind them that working smoke alarms are usually the family's first alert to a fire.

6. THE FIREFIGHTER IS YOUR FRIEND: As mentioned earlier, a firefighter in unfamiliar gear and mask can be frightening to a child. Contact your local fire department and arrange to have a firefighter visit your children. (Better yet, find out if a child in the class has a parent who is a firefighter.) Ask the firefighter to bring the gear and explain to the children how the equipment is used. I usually dress in the gear myself while the firefighter shows the children how it works. We also encourage the children to try the gear themselves. This technique alleviates a lot of apprehension. (Also, you will develop a big appreciation for the firefighter. The weight and bulk is tremendous!)

7. TREAT BURNS WITH COOL WATER: Of course the best way to avoid burns is to stay away from hot objects, but should an accident occur, children need to get help immediately. Stop minor burns by applying cool water to the skin. Bring matches, heating equipment, coffee pot and mug, iron, toaster, lighters, etc. to show the children. Discuss how these are objects to stay away from.

8. DON'T PLAY WITH MATCHES: A match is a tool with many uses, but it is also dangerous if not used safely. Matches should only be used by adults. Give examples of people using matches and ask if the use is risky or safe. Extend their answers by asking the children what they should do.

There is more to Fire Prevention Week than plastic fire hats and coloring books. In fact, there is more to fire safety than observing it one week in October. As teachers, we have the ability to increase awareness of this serious problem. Through our guidance, fire safety can be spotlighted throughout the year, so young children have the knowledge and confidence to help themselves in a fire alert.

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SHARED BOOK EXPERIENCES IN THE CLASSROOM

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Corduroy's pocket, Goldilock's three bears, and Little Hen's loaf of bread are familiar story concepts to young children who have had the privilege of spending their early years in a home environment rich with literature. The importance of storybook sharing can no longer be underplayed in programs for young children. Researchers have documented that children who have been read to at an early age have a good start in constructing concepts about the forms and functions of literacy (Baghban, 1984; Bissex, 1980; Durkins, 1987; Heath, 1982; Sulzby, 1985; Taylor, 1983; Teale, 1981.)

For children who have not been read to at home, it is the school's responsibility to provide these experiences. Before educators can expect these children from non-literacy-rich environments to construct concepts about print, they need many and varied experiences with books. For children who have been read to at home, educators have the responsibility to extend and enrich their existing knowledge. They will also benefit from continued experiences with literature.

A curriculum designed around story sharing can provide experiences for all children to help them either formulate concepts about print or expand and enrich these concepts. The "Shared Book Experience", which Don Holdaway (1979) has written about, closely parallels the home story sharing time. A parent shares a story with the child, the child asks for repeated readings of favorite stories, and then the child enjoys "reading" the story alone. In the classroom, the sequence includes introducing a favorite story for enjoyment, often in a Big Book format, repeated readings of favorite stories, and then encouraged independent "reading" and availability of activities related to the shared book. These activities can be multi-sensory and can encourage art, music, science, cooking, and composing experiences.

To facilitate shared story time, we have classified favorite books into the following curriculum areas: art/cooking, music, social studies (families, friends, and feelings), science, math and writing/language. This will encourage the sharing of books throughout the day. The shared book activities involve the children actively with the text, the concepts in the text, and with the role of storyteller.

I. Art/Cooking

Harold and the Purple Crayon - Crockett Johnson, 1955; I Can Draw It Myself - Dr. Seuss, 1970; Rainbow of My Own - Freeman, 1966; Little Blue Little Yellow - Leo Lionni, 1959; Stone Soup - Marcia Brown, 1947; Chicken Soup With Rice - Maurice Sendak, 1962; Poppy Seed Cakes - Margery Clark; Bread and Jam for Frances - Russell and Lillian Hoban, 1964; Federich - Leo Lionni, 1963.

II. Music

Boy With a Drum - Harrison; Old MacDonald - Lippincott, 1972; The Wheels on the Bus - Nancy Larrick, 1972; There Was an Old Woman - Rose Boone, Alan Millis, 1961; A Hunting We Will Go - John Langstaff, 1974; Frog Went A Courtin' - John Langstaff, 1955.

III. Social Studies

A. Families: Make Way for Ducklings - Robert McCloskey, 1941; Ask Mr. Bear - Marjorie Flack, 1932; The Little House - Virginia Burton, 1942; A Baby Sister of Frances - Russell Hoban, 1964; You'll Soon Grow Into Them - Pat Hutchins, 1971.

B. Friends: A Pocket for Corduroy - Don Freeman,

1968; The Little Red Hen - Paul Galdone, 1973; Yummers - James Marshall, 1973; Mr. Grumpy's Outing - John Burningham, 1971; I'm Not Oscars Friend Anymore - Marjorie Sharmat, 1975; Let's Be Enemies - May Janice Vary, 1961; Will I Have A Friend - Miriam Cohen, 1971.

C. Feelings: Alexander and the Terrible, Horrible, No Good, Very Bad Day - Judith Viorst, 1972; There's a Nightmare in My Closet - Mercer Mayer; Where the Wild Things Are - Maurice Sendak, 1963; Leo the Late Bloomer - Robert Krause, 1970; The Gorilla Did It - Barbara Hazen, 1974; The Gingerbread Boy - Paul Galdone, 1975; Nobody Listens to Andrew - Elizabeth Gullfoile, 1957; Ira Sleeps Over - Waber; The Polar Express - Van Allsburg, 1985; Why Mosquitos Buzz in People's Ears - Verna Aardema, 1975; Madeline - Ludwig Bemelmans, 1939; Jeanne Marie Counts Her Sheep - Francoise, 1957; A Bag Full of Puppies - Dick Gackenbach, 1981; The Story of Bluebonnet - dePaola; The Story of Ping - Marjorie Flack and Kurt Wiesa, 1933.

IV. Science

Little Blue, Little Yellow - Leo Lionni, 1959; Under the Sun - Ellen Kandoian, 1987; The King Bidgood's in the Bathtub - Audry Wood,1985; The Carrot Seed - Ruth Fraus, 1945; Inch by Inch - Leo Lionni, 1960; Blueberries for Sal - Robert McCloskey, 1948; Caps for Sale - Esphyr Slobodkina, 1947; The Very Busy Spider - Eric Carle, 1984; Whistle for Willie - Jack Ezra Keats, 1964; Swimmy - Leo Lionni, 1963; Rosie's Walk - Pat Hutchins, 1968; Country Noisy Book - Margaret Wise Brown, 1940; You Look Ridiculous - Bernard Weber, 1966; The Very Hungry Caterpillar - Eric Carle; Snowy Day - Jack Ezra Keats; Stone Soup - Marcia Brown, 1947; Harbor - Donald Crews, 1982; Gobble, Growl, Grunt - Peter Seir, 1971; We Like Bugs - Gladys Conklien, 1952; A Tree is Nice - Janice May Undry,1956.

V. Math

One, Two Where's My Shoe? - Tomi Ungerer, 1964; Cricktor - Tomi Ungerer, 1958; Blueberries for Sal - Robert McCloskey,1948; Goldilocks and the Three Bears - Paul Galdone, 1972; The Doorbell Rang - Pat Hutchins, 1986; Three Billy Goats Gruff - Marcia Brown, 1957; Millions of Cats - Wanda Gag,1928; 10 Bears in my Bed - Stan Mack, 1974; Annos Counting Book - Mitsumasa, 1977.

VI. Writing

Frog and Toad Are Friend - Arnold Lobel, 1970; The Jolly Postman - Janet and Allan Ahlberg, 1986; Letter to Amy - Ezra Jack Keats, 1968; Frog and Toad Together - Arnold Lobel, 1972.

VII. Playing with words

A Chocolate Moose for Dinner - Fred Gwynne, 1976; The King Who Rained - Fred Gwynne, 1976; Chicken Soup With Rice - Maurice Sendak, 1962; A Hole is to Dig - Ruth Krause, 1952; Don't Forget the Bacon - Pat Hutchins, 1976; I Can't Said the Ant - Cameron, 1961.

Shared Book Activities

I. Art/Cooking

(A) Harold and the Purple Crayon - Students can share their own experiences by drawing their own purple lines and dictating their story.

(B) Stone Soup - Recipe: 1 washed agate stone; 3 qts. water plus soup bone; 4 carrots, sliced; 4 potatoes, diced; 4 stalks celery, sliced; 4 small onions, chopped; 1 can of tomatoes. Simmer bone and stone 30 minutes. Add vegetables and cook until done.

II. Music

(A) There Was An Old Woman Who Swallowed A Fly - A woman is cut out of tagboard and has a plastic pocket for a stomach. Children participate by putting the appropriate animals into her stomach.

III. Social Studies

(A) Families - A Baby Sister for Francis - Language Experience. Story about new siblings.

(B) Friends - The Little Red Hen - Participation Story - as teacher reads, students hold a stick puppet of a pig, cat or duck and join in when their part is read.

(C) Feelings - Ira Sleeps Over - Children write their own stories about what they would bring to a sleep-over at a friend's home.

IV. Science

(A) The Carrot Seed - Children are given seeds to plant their own carrots.

(B) The Snowy Day - Parts of the story are pasted on a sturdy box to make a story cube. The cube is rolled and the student tells that part of the story.

V. Math

(A) Inch by Inch - Children are given a foot-long footprint to measure things that are longer and shorter than one foot.

(B) Goldilocks and the Three Bears - A dramatic play center is set up with: a table, three bowls, three bears, three small chairs, three small beds, a doll.

VI. Writing

(A) Frog and Toad Are Friends (Chapter: The Letter) - Children write a letter to Toad.

(B) Frog and Toad Together (Chapter: The List) - Students write a list to share with Toad.

VII. Language

(A) A Hole Is To Dig - Children make up their own definitions for familiar things in their classroom.

The Shared Book Experience encourages children to join in the reading process. Children also need many opportunities to interact with the concept of text and the concepts within the text. Developing activities for favorite books will help children become actively involved in literature.

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COMMUNITY BASED SCREENING IN EARLY CHILDHOOD: AN ALTERNATIVE FOR PUBLIC SCHOOLS, PRESCHOOL AND CHILD CARE PROGRAMS

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The Early Intervention System

Early intervention programs for children with developmental delays and disabilities are recognized as an integral part of exceptional education service delivery. Today it is generally acknowledged that children, parents, school districts and social service systems will experience benefits from quality intervention programs provided at an early age. Positive effects of early programming are supported by both efficacy research and learning theory (Hanson, 1985; Peterson, 1987; Ramey, Bryant, Sparling, & Wasik, 1985; Schweinhart, Berrueta-Clement, Barnett, Epstein, & Weikart, 1985; Simeonsson, Cooper & Scheiner, 1982).

In most states, children are eligible for exceptional education services through their public school district beginning at 3 years of age. These public school services are mandated in the Education for All Handicapped Children Act (P.L. 94-142) of 1975 and reauthorized in more recent legislation, P.L. 99-457 (1986). In addition, many children below 3 years of age are receiving services through developmental centers which provide specially designed programs for very young children with special needs. It is expected that services to children, birth through 2 years old, will increase because of provisions contained in P.L. 99-457.

Childfind Processes

The availability of exceptional education programs at early ages is certainly forward progress, however, NO program is considered useful unless children who can benefit from the service are properly located and identified. Efforts to access children are referred to as Childfind activities. Childfind can take many forms and may range from pamphlets about public school exceptional education services to newspaper announcements to "round-up" or large group screening programs.

Community Based Screening in early childhood is a Childfind strategy designed to systematically involve preschool teachers and child care providers in the process of locating children who may require exceptional education programming. This approach is based on the notion that if preschool/child care educators are trained to understand the purpose of developmental screening and the implementation of screening strategies, they will be better equipped to act as an integral part of the Childfind process.

Development of the Community Based Screening model began as part of Wisconsin Department of Public Instruction Preschool Discretionary grant award (P.L. 99-457 funds) to the Mequon-Thiensville School District in 1986. Prior to the model development, preschool Childfind consisted of screening all children entering kindergarten and screening other preschool-aged children on an individual request basis. Using this procedure, approximately 90% of children who required early childhood-exceptional education services were identified before entering kindergarten. Although the system was working, the data also indicated that there was a significant influx of children referred in the spring prior to their kindergarten entry. In some cases, this would be considered appropriate timing, but in many cases intervention could have been provided at an earlier point in time. A major goal of Community Based Screening was to create allies in the community who were aware of the steps to take as soon as they became concerned about a child's development. This Childfind strategy has increased the timely nature of referrals in the Mequon-Thiensville School District.

The first step in the Childfind process is Casefinding or accessing the preschool-aged population and soliciting referrals (Peterson, 1987). It is imperative to effective casefinding that we reach out to those people who have access to young children. A challenge arises with consideration of the variety of situations in which preschoolers can participate. In contrast to the school-aged population who are

essentially all accessible through their school placement, preschoolers can be any number of places: home with a parent or babysitter, day care centers, preschool programs, community recreation programs, doctor's offices, or immunization clinics.

To access the school-aged population, one goes to school buildings and informs teachers, administrators, and parents of the available screening/referral services, evaluation processes and program possibilities. Community Based Screening applies this same strategy to the preschool aged child. Information and training is provided to those who have contact with young children. This includes preschool educators, child care providers, and other community preschool service personnel. It is important to note that additional strategies need to be considered to access children who are at home. Community Based Screening is considered an alternative for school districts who have a high percentage of children in community settings.

The second step in the Childfind process is screening. The term screening is defined as 1) a brief and general measure designed to identify POTENTIAL problem areas and 2) a preliminary step in determining if further evaluation is necessary (Hayden & Edgar, 1977; Meisels, 1985; NAEYC, 1988). A clear definition of the preliminary purpose of screening is important to the Community Based Screening instruction program. It is essential that participants do not confuse SCREENINGwith EVALUATION which is done for the purpose of diagnosing a child's exceptional education needs and determining a program placement. Screening is done to verify if further evaluation is necessary. The confusion of screening and evaluation has been documented as a source of ambiguity across the country. A recent survey indicated that some states were using terms such as screening assessment, evaluation, and identification interchangeably to describe the purpose of their screening programs (Gracey, Azzara & Reinherz, 1981).

Readiness vs. Developmental Screening

Another aspect which plays a role in the description of Community Based Screening is clarifying the difference between readiness vs. developmental screening. Samuel Meisels states "The major difference between the two procedures is the difference between skill acquisition and the ability to acquire skills." (p. 7, 1985). Developmental screening tests tell us if there is a question about a child's developmental potential. Readiness tests tell us if a child has acquired skills which will help him/her be successful in a specific curriculum. Developmental screening information allows educators to make decisions about referrals for exceptional education evaluation. Readiness information is most useful for curriculum planning and it is not advisable to use this information to prevent children from attending kindergarten. In a recent position paper, the National Association of Early Childhood Specialists in State Departments of Education states "The educational community can no longer afford to ignore the consequence of policies and practices which...assign the burden of responsibility to the child, rather that the program..." (p.2). Their recommendation is that programs accommodate the broad range of normal development by providing kindergartens which implement developmentally appropriate teaching strategies (NAECS/SDE, 1987).

Community Based Screening Training Model

Community Based Screening is developmental screening and connected to the exceptional education referral process. The following definitions have been taken from the National Association for Young Children's position paper Standardized Testing of Young Children 3-8 Years of Age (p. 45, 1987). These are the concepts that are used in the Community Based Screening training model.

Developmental Screening. A test used to identify children who may be in need of special services; as a first step in identifying children in need of further diagnosis; focuses on the child's ability to acquire skills.

Readiness Test. Assessment of a child's level of preparedness or a specific academic or pre-academic program.

The training model is currently being packaged as a manual and video tape module. The 10 hour program is designed to cover the concept of developmental screening as a many faceted information collection process. The administration of a formal screening test is only a part of the process. The ability to recognize child behaviors, share results

and concerns with parents, and access the exceptional education system are all addressed as goals for the training participant. The training module has been implemented using the Denver Developmental Screening Test as the formal tool, although another instrument could be substituted if desired.

Training is recommended over a five week period to allow for practice and self study of some materials. Each two hour session is comprised of lecture, discussion, and practical experiences. The instructor is supplied by the school district at no cost to the preschool or child care providers. The training does supply the participants with credit for required inservice hours for child care licensing.

In conclusion, it should be noted that this is not an answer for every district or community. If the circumstances are favorable, this program can provide a time and cost effective method of locating and identifying children in need of evaluation. It also promotes a cooperative atmosphere which can strengthen interagency relationships. The benefit for school districts the operation of an active Childfind system.

Further information about the Community Based Screening training module can be obtained by contacting the author.

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MATHEMATICS USING MANIPULATIVES: A PIAGETIAN APPROACH

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An understanding of intellectual or cognitive development is of crucial importance to educators of young children. A cognitive approach to learning emphasizes mental processes. One of the foremost cognitive theorists was the Swiss biologist and philosopher, Jean Piaget. Piaget viewed the mind as central to the understanding of how human beings learn and develop. The purpose of this article is to outline some of Piaget's ideas and to provide the teacher with activities based on Piagetian theory, designed to teach mathematical concepts.

Piaget's Theory of Cognitive Development

Contributions of Piaget's cognitive theory to the field of education are many and varied. Osborn and Osborn (1983), have outlined several key features of Piaget's theory which will be discussed here. The first is the idea that children view their world differently from adults. This is manifested in many ways. For example, Piaget believed that young children are egocentric and are not willing or able to take another person's point of view. Also, at this stage in their development, children often view inanimate objects as alive and do not seem capable of moral reasoning.

Another feature of Piaget's theory is the process of intellectual organization. Cognitive structures or schemas are the organized patterns of behavior and perception which the child attains through experience. Schemas are constantly adapted through a process of assimilation and accommodation to make them better fit environmental conditions. Assimilation is the process of integrating new information into an existing schema whereas accommodation is the process of changing a schema to fit a new situation. Through this process of assimilation and accommodation, the child achieves a balance or equilibrium which is important for cognitive growth.

A third idea stemming from Piaget's theory is that intelligence or knowledge is constructed. In other words the child is actively involved in exploring and interpreting the environment. Through manipulating objects, testing out ideas, and modifying theories the child constructs generalized concepts which will aid learning.

Ways of acquiring knowledge is a further idea noted by Piaget. He believed that there are three types of knowledge. The first, physical knowledge, is acquired through physical activity. for example, experimenting with a block might lead thechild to discover its properties and function. The next type of knowledge, logico-mathematical knowledge, is acquired through the observation of relationships. For instance, having observed the properties of a group of blocks, the child might note certain relationships between the blocks. Social knowledge is the third type of knowledge. The child acquires this through interactacting socially with others in the environment.

Another key idea in Piaget's theory is that activity, both physical and mental, is a vital part of cognitive development. In addition to thinking about a concept, children need "hands on", concrete experiences in order to make learning more meaningful. Piaget's cognitive theory also posits that this meaningful activity must be coupled with a nurturing and stimulating environment, one that challenges children to explore their surroundings. Lastly, play is important for growth, both in terms of skill development and as an imaginative outlet. Through play children learn the skills and roles necessary for later life.

Piaget designed several experiments which provide added insight into the child's way of thinking. These experiments or "cognitive tasks", when administered to children with care and sensitivity, can help in the assessment of thinking skills. The

Piagetian tasks include one that determines cognitive style, or how impulsive or reflective a child is, as well as tasks related to conservation, classification, temporal relations, and spatial relations (Osborn and Osborn, 1983).

Activity-Centered Mathematics Curriculum

Baratta-Lorton (1976) has suggested an activity related mathematics curriculum based on some of Piaget's ideas. The activities suggested by Baratta-Lorton, which will be discussed in this section, have been successfully used with early childhood and primary children. The activities are related to real world experiences and use materials from the natural environment. When implementing an activity-centered mathematics curriculum, Baratta-Lorton (1976) notes that it is extremely important to let the child explore new materials in his or her own way before directing those explorations. This will enable the child to focus on mathematical concepts rather than on the materials themselves.

Pattern. Pattern is an underlying theme in mathematics. According to Adams and Hamm (1989), "Patterns of mathematics - number, space, logic, infinity and information are directly related to the psychological activities of perception, emotion, thought, intuition and communication" (p. 93). Baratta-Lorton notes that it is also a valuable problem solving tool for the child and has a profound effect on the development of mathematical understanding. Children need to experience pattern visually, auditorily and physically in order to analyze, duplicate and extend each pattern in a variety of ways.

Rhythmic clapping is a good introduction to the skill of patterning. The teacher claps a pattern (for example, clap clap snap clap clap snap) and the children join in when they know the pattern. Later, the children's suggestions can be incorporated into the rhythmic clapping. Children should be encouraged to experience different ways to interpret a pattern (for example, clap the pattern with a partner, cross your hands on the snap or play patty cake and snap). This will help to stretch their imagination, forcing them to think of alternatives.

A pattern can also be constructed with unifix cubes. The teacher can clap a pattern which the children interpret with the cubes. As children demonstrate increased skill, they can create more difficult patterns and label the pattern auditorily. For example, the children can make trains which correspond to clapping patterns such as AABAABAAB or they can say the colors of the cubes as they clap a pattern (clap snap snap clap snap snap--blue yellow yellow blue yellow yellow). Pattern block activities emphasize hand-eye coordination, strengthen left to right progression and give children the opportunity to reproduce, extend and create patterns.

"People Row Patterns" have the children acting out a pattern and verbalizing the visual result. For instance, children can draw pictures of people sitting and standing. These pictures can be laid out to form a pattern (for example, stand stand sit stand stand sit). Some of the children can chant the pattern "stand stand sit..." as the rest of the class stands or sits to act out the pattern.

Children can also make designs using pattern blocks. They can then copy their designs by cutting out the appropriate construction paper shapes and gluing them down onto tagboard. Each child can also glue a picture of himself or herself onto the tagboard. This helps to recognize the value of their contribution thereby enhancing their feelings of self-worth. The completed tagboards can be used in future patterning sessions, either by individual children or by groups of children. Children can also glue their paper shapes onto 9" x 12" construction paper so as to make placemats to be used by the class on special occasions. The children can make border patterns for placemats by using shapes cut from different colors of construction paper. They can start with a simple pattern using two colors or two shapes before they attempt more complicated patterns. Crayon designs can also be used to create border patterns for placemats. The tagboards and placemats can be covered with contact paper for durability.

Literature lends itself well to patterning as many children's books have a predictable pattern - "Three Billy Goats Gruff," "The Very Hungry Caterpillar," "Henny Penny," and "Where the Wild Things Are." Greater learning takes place and knowledge is more readily transferred when there is integration of different curricular areas.

Sorting and Classifying. According to Baratta-Lorton (1976), sorting and classifying are fundamen-

tal aspects of life. People use these skills when they go to a grocery store for particular selections, put away dishes, recall a politician's name or select coins to buy an ice cream cone. Forming classes and dealing with the relationships within a class and among different classes encourages the growth of clear and logical thinking. To be able to sort and classify a group of objects, children first need to recognize an attribute, i.e. an intangible idea describing a particular property which some objects have in common. In order to sort objects, children need to focus on one particular property of the objects to the exclusion of the others.

Sorting items in treasure boxes is a favorite activity with children. This involves manipulating materials children find attractive - buttons, bottle caps, jewels, sea shells, nuts and bolts, keys, seeds, rocks and postage stamps. The most obvious attributes of size, shape, and color are often discovered first after the child has had ample opportunity to manipulate and talk about the objects. The children can work in groups to sort the objects in a variety of ways. They can be encouraged to use vocabulary to describe the relationships of size, shape, color, texture and other properties. Children's cognitive and language development can thus be assessed by the teacher as she observes the children working in groups.

"People Sorting" is another activity which uses the skills of observation, problem solving, prediction and drawing conclusions. Before beginning the activity a black and white arrow pointing opposite directions needs to be cut out and pasted on the floor. Each child is then given a black and white unifex cube. The teacher can begin the activity by saying that the children are going to sort themselves according to a particular attribute (for example, buttons on shirt or no buttons on shirt). Each child is asked to come to the front of the group. If a child has a button on his/her shirt, then he/she is asked to follow the black arrow. If he/she does not have a button on his/her shirt, then the child is asked to follow the white arrow. As each child comes forward, the rest of the children can be asked to show with their cubes what arrow the child should follow. (the group shows their black cubes if the child has buttons on his/her shirt and their white cubes if the child does not have buttons on his/her shirt). The activity can continue until ten or fifteen children have been sorted into the two groups. This activity can be repeated many times, changing the categories each time.

A more difficult level of the same activity is "Silent Sorting" in which no one is allowed to talk during the game. The teacher, having silently determined the attribute by which the sorting will be done, motions to each child to follow a particular arrow until three or four children are sorted into each category. It is then upto the children to abstract the attribute from the visual evidence and predict with their black and white cubes which arrow each child will follow. When the sorting is complete a discussion can take place as to how the sorting was done.

Estimation. Estimation is a life-long skill that cannot be underestimated in the hierarchy of skills taught to our children today. Estimating the number of objects in a jar, the number of counties in our state, the circumference of a pumpkin, and the time it takes to walk to school are everyday opportunities to teach this skill. According to Poulas (1988), in order to avoid innumeracy, the mathematical analogue of functional illiteracy, we need to develop a feel for numbers and probabilities - some ability to estimate answers to the ubiquitous questions: How many? How likely? The recent Mathematics Report Card released by the Educational Testing Service indicates the rampant innumeracy of our high school students showing the urgent need to emphasize estimation at an early stage of mathematical awareness.

This is only a beginning, but a beginning in the right direction - away from teacher talk and testing into application of real-world situations. We need to increase children's ability to deal with the various levels of mathematical reality rather than overemphasize computation and arithmetic. As Minsky (in Adams & Hamm, 1989) notes, our children's mathematics knowledge must be shaped into "robust, cross-connected webs" (p. 91) instead of "slender, shaky tower chains" (p.91), which can break at any link.

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FOUR THEMES IN THE LIVES OF FAMILIES COPING WITH DISABILITY

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Practitioners who work with people who have disabilities have recognized the need to identify and examine different impacts of disability on families at various transitions in the life cycle (Bristol & Scholpler, 1983; Turnbull, Summers, & Brotherson, 1986). Examining these impacts and issues could help identify problems that interfere with life cycle transitions. Strategies to aid families in preparing for those transitions can eventually be found. This study was conducted in an attempt to understand more fully how the continuous presence of a member with a disability may affect a family throughout the family life cycle. The original study, on which this paper is based, examined families at two transition points in the life cycle: transition into and transition out of formal school for the family member with a disability. This paper will focus primarily on the effects and issues pertinent to the families with a child in transition into school. For a more complete report of the study and its results, see Brotherson and Spillers (in press).

Methodology

The current study used a qualitative research design to investigate and examine issues that families identified at the transitions into and out of formal school. The design of this research study gave family members the opportunity to express issues and concerns in their own words. Qualitative research focuses on what actually occurs in the lives of people and how the individuals describe those events in their lives. For a more detailed description of qualitative methodology, see Brotherson and Spillers (in press), Patton (1980), or Taylor and Bogdan (1984).

Subject Selection. A purposive sampling procedure was used to obtain subject families for the present study. With purposive sampling, subjects were chosen to provide divergent representation on selected characteristics. Originally, four families were chosen to provide diverse representation on the following criteria: one or both natural parents at home, one member with a moderate-to-severe disability; variety of disabilities represented; member with the disability in transition into or out of formal school; and living in urban or rural areas.

Data Collection. Data were collected from indepth interviews and field notes. The indepth interviews were semi-structured in nature, in that the researchers used a set of general questions to guide the interactions. The interviews were conducted in the families' homes with at least two researchers present to conduct the interviews and to take field notes. Each interview was tape recorded and later transcribed verbatim for analysis (Stainback & Stainback, 1984).

Field notes are personal logs that help researchers document the development of the investigation. During each interview, the researchers recorded field notes containing two separate sections. In the descriptive section, the researchers attempted to note exactly what they saw and heard. In the reflective section, the researchers noted their own feelings, speculations, and impressions (Stainback & Stainback, 1984).

Data Analysis

Data analysis involved the process of indepth reading and rereading of over 400 pages of interview transcripts and over 60 pages of interviewer field notes. The researchers organized and categorized information in a search for patterns. Through this method of data analysis, four major themes emerged regarding the impact of disability on the families with a child in the early life cycle transition (transition into formal school). These themes cut-across disability areas, and in fact, cut-across both life cycle transitions, as they were salient in the other two families as well. This section will describe the four themes and will substantiate the results with statements from the interviews and field notes. The four major themes discussed are the identification of positive

contributions made by the member with a disability, the importance of an informal support network, the mixed support from professionals, and the limited expectations for the future.

Identification of Positive Contributions. The literature on families with disability is replete with examples and evidence of the negative impact of a disability on family members (Longo and Bond, 1984; Wikler, 1981). Very few sources have acknowledged that positive growth and benefits can occur in relation to a disability. Both of the families with a young child with a disability spoke freely of the positive contributions that the disability and the member with the disability have made toward the family.

In Family A, both parents said that they have become more observant of people since the birth of Chris, their child with a severe-profound hearing impairment. Mrs. A expressed that, "We saw a lot of things in people that we never really noticed before... We've become more sensitive to the problems and struggles of others." The members of Family B expressed how they have become a closer knit family since Shawn, their child with communication delays and behavior problems, was born. Mrs. B said that she "explains so much to Shawn." Both Mrs. A and Mrs. B shared several instances in which they noticed themselves becoming more assertive than before. As Mrs. B explained it: "When you have to fight for your child you can get pretty demanding."

Importance of Informal Support. Both families discussed the importance of an informal social network in their lives. In situations where informal support was not available to families, the void was evident as a source of pain or stress.

In Family A, one side of the extended family demonstrated support, whereas the other side did not, and in fact, denied the ramifications of the disability. Mrs. A reported that one set of grandparents refused to learn sign language. "They think they're signing something when they're really not. They want to be blind to it." Mr. and Mrs. A spoke of their difficulty reconciling the strain and distance between themselves and these grandparents. Mr. A said with some resignation in his voice, "You can't disown them (grandparents) yet you can't turn around and say, 'Well, we're not going to let you see him anymore.'" Conversely, Family A described how the other side of the family supports them and accepts Chris. These grandparents have attended signing classes with Mr. and Mrs. A. They, and an aunt and uncle, often provide respite care and work at communicating with Chris.

Similarly, Family B experienced positive support from one side of the family and little or no support from the other side of the family. In speaking of one set of grandparents, Mrs. B said that, "We don't get support...For a long time they'd just say (Shawn)'s going through the terrible twos. (The grandfather) tried to discipline Shawn once because he thought all that Shawn needed was more discipline. That didn't work at all." Mrs. B further described how Shawn became the family joke. "At first it was funny, but then it got old and it hurt."

Both families reported changes in their friendships because of their child with a disability. Close friends became distant and some acquaintances and neighbors became closer to them. Mr. A expressed his feelings this way: "You visualize that your friends would come to help you out. It wasn't that way at all. And people that you don't expect anything from turn out to be your friends."

Mixed Professional Support. Interactions with professionals was a prominent topic of discussion within both families. Each family reported a host of negative experiences with medical and educational personnel. For each family, however, at least one professional emerged as a positive support person to whom the parents could pose questions, express concerns and fears, and whose opinions the family trusted.

In Families A and B most of the discussion and communication with professionals centered around diagnosing the disability and finding appropriate services for the child. Both Mrs. A and Mrs. B reported having a suspicion that something was wrong when their children were infants, yet their family physicians discounted the intuitions and knowledge of these women. As Mrs. A said in reference to explaining her observations of Chris' impaired hearing to the pediatrician: "I just don't understand why she wasn't listening to me." When the diagnosis was eventually made and the family sought a second opinion at a renowned teaching hospital, Mr. A described their experiences as

"awful...it was a nightmare...they were cruel."

Mrs. B described her difficulty in convincing a physician to take her seriously. With incredulity, she recalled her third visit to a physician's office regarding Shawn's behavior: "He gave Shawn the Sucker Test. He said, 'Shawn, if you come over here, I'll give you a sucker.' Well, of course Shawn went over to him, so the doctor figured there was nothing wrong." Mrs. B continued to explain how the physician referred her to a child psychiatrist, although she would have to wait four to five months for an appointment with this professional. No referrals for speech-language or behavior therapy were made by these professionals. Mrs. B said that she found out about potential services and agencies through conversations with one of her neighbors.

Limited Expectations for the Future. These families indicated limited expectations for the future and demonstrated difficulty with making long range plans for needs of the individual with a disability. Each family had different reasons for their limited expectations and difficulty in planning. Both families focused on short term, concrete goals, rather than on long term goals. As Mr. A said: "I'm not going to be shooting for goals that Chris can't obtain." The concerns for both families centered around educational placement and general development. Family A expressed that they just "want to stay ahead of Chris in signing so that he can still learn from us." Family B expressed concern that "Shawn will slip through the cracks and not get the help that he needs. He got where he is because of a lot of hard work." Mrs. B captured the sentiments of both families when she said: "It's hard to look at what's down the road so we're just looking at next Fall."

Conclusion

Both of these families provide evidence that at least four themes typify their lives as they raise their child with a disability. Families having children with disabilities have many stresses, issues, and challenges before them. Sometimes professionals become too narrowly focused in their work with families. We acknowledge the needs of the family and child at only one life cycle stage or transition. We neglect to consider the state of their informal support networks. We treat the parents as "part of the problem" and deny them the respect that they deserve. The identification of the issues in this study have given us more information with which to work with families so that we can give optimal support to persons and families with disabilities.

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